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THE RELATION OF RODENT PLAGUE TO HUMAN INFECTION *

W. C. RUCKER, M.D., M.S., GR.P.H.
Assistant Surgeon-General, United States Public Health Service
WASHINGTON, D. C.

The most essential factor in the control of plague during recent years has been the realization that it is essentially a rodent epizootic. It is true that the literature of plague contains reports of the disease in monkeys, dogs, cats, horses, asses, cattle, sheep, goats, swine, calves, chickens, pigeons, geese, camels, kangaroos, bats, frogs, geckoes, goldfish and carp, but many of these reports are not confirmed by convincing experimental evidence.

Hankin[1] noted an epizootic in monkeys in October, 1897, at Kankhal, and a second simian epizootic was observed at a little later date at Jawallapur. A third series of cases was observed at Gadar in the residency of Bombay in December, 1899. In the second and third simian epizootics the diagnosis was confirmed bacteriologically. Calmette and Salimbeni[2] and the German and Russian plague commissions demonstrated the susceptibility of the brown monkey and the gray monkey to plague. From the collected evidence it may be deduced that while monkeys have a great susceptibility to plague infection, they do not seem to play an important rôle in its propagation under natural conditions.

While there are a number of reports on the susceptibility of the dog to plague infection, a study of them does not warrant the belief that the dog is liable to the disease.

There are a large number of reports on epizootic plague among cats, yet these animals probably play a very unimportant part in the continuance and spread of the disease. Hunter[3] concludes that cats are susceptible to plague and that they suffer from an acute or chronic plague septicemia. He was of the opinion that they infected themselves by eating infected rats.

Horses are moderately susceptible to plague infection when pure cultures are injected into their blood streams in relatively large doses. A careful review of the literature does not disclose an instance in which they suffered from the disease in nature.

Schreyer,[4] K. Matsuo,[5] and Wu Lieu Teh[6] have reported that coolies working in a coal mine and attacked by pneumonic plague infected donkeys with the disease. These are very extraordinary conditions and may be accounted as practically negligible in the course of an ordinary epidemic.

Under natural conditions plague has never been found in bovines. It is true that Simson[7] reported ingestion plague among calves, chickens, pigeons, dogs, geese, sheep and swine, but Bannerman and Kapadia,[8] the German commission,[9] and Hafkin and Lowson[10] have reversed his reports. It is, therefore, logical to conclude that these animals do not play a rôle in plague perpetuation or dissemination.

Since 1899, when Dchurkowski[11] described an infectious disease of camels closely resembling plague, there have been several reports of alleged outbreaks of plague in which the camel was the vehicle. The Astrakan commission decided that the camel was susceptible to plague and suggested that these animals might have been the means by which plague has been introduced into countries along the caravan routes. It is doubtful, however, if camels play any great part in the large problem of plague.

The report of the Board of Health of Sydney, 1902, contains a note by Thompson in which he states that in the epidemic of that year seven kangaroos died from plague in the zoological garden at Sydney. This is an isolated instance and without bearing on the general problem.

With regard to bats, the reports are at variance. Gosio,[12] experimenting with the *Vesperugo noctula*, believed that he was able to infect them. On the contrary, Toyama[13] reported these animals as insusceptible.

It seems to be fairly clearly demonstrated that birds in general, and particularly birds which run on the ground, are not susceptible to plague.

The cold-blooded vertebrates, that is, reptiles and batrachians, have been experimented with by Nuttal,[14] Dweill,[15] Furth,[16] and Fukahara,[17] and do not seem

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

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13. Toyama: Experimental Studies on Plague, Ztschr. f. med. Mikros., 1909.
14. Nuttal: Centralbl. f. Bakteriol., 1897, xxii, 87.
15. Dweill: Centralbl. f. Bakteriol., 1897, xxii, 383.
16. Furth: Ztschr. f. Hyg. u. Infektionskr., 1907, No. 2, p. 315.
17. Fukahara: Arch. f. Hyg., 1907, lxiii, Part 2.

susceptible to plague, either by injection or ingestion.

Mention need not be made of the rôle of insects and *Ixodidae* in relation to plague, their part being the transmission of the infection from host to host rather than the function of keeping the disease alive within their own bodies.

The rôle of the rat in the pathogenesis of plague is classical and there is a preponderance of evidence which proves that bubonic plague in man depends entirely on the presence of the disease in rodents. It is true that in the pneumonic form of the disease infection occurs directly from man to man without the intermediation of any ectoparasite, but the great bulk of plague is not pneumonic, but bubonic, and it is the rodent species which keeps the disease alive and which carries it from country to country and into the home of man. Plague has been found in nature in the *Mus norvegicus*, the *Mus rattus*, the *Mus alexandrinus*, and the *Mus musculus*. The *Nesocia bandicota*, or bandicot rat; the *Arctomys bobac*, or tarbagan; the *Putorius furo*, or ferret; the *Herpestes griseus*, or mongoose, and the *Neotoma fuscipes*, or brush rat, have all been found susceptible to the disease. All of the spermophiles have proved infectible, as have also the *Cynomys ludoviciana*, or prairie dog, and the *Putorius foetidus*, or skunk. The *Citellus grammurus*, or rock squirrel, and the *Citellus beecheyi*, or ground squirrel, have also proved infectible. The disease has been found in nature in brush rats, skunks and ground squirrels. The overwhelming fact in plague perpetuation and spread is that it is a rodent disease.

It is interesting to study the distribution of human plague cases in their relation to rodent plague cases. It is, of course, impossible to discover every case of rodent plague and on account of the migratory habits of rats it does not necessarily follow that the infection exists in large amounts at every place in which plague rats are taken. On the other hand, the impossibility of determining accurately the movements of human beings renders it difficult at times to discover the exact place at which infection was received. Not infrequently, however, plague rats are found in or near the building in which the human plague victim worked or lived, and the reverse is even more true, that human plague does not occur among people who work and live in rodent-free surroundings. Of the thirty cases of human plague which occurred in New Orleans in 1914, only five were unconnected with rodent plague foci, and in many of them the place at which the infection was received was accurately determined.

The foregoing is the basis of the measures for plague prevention and eradication. Since plague is a rodent disease, if man is isolated from rodents he will not under ordinary circumstances contract the disease, the key to prevention being the separation of man from rats.

It is manifestly impossible to kill all of the rats in a given community, much less in a whole country, or the entire world. If their migrations can be controlled, if they can be excluded from the places in which man lives and works, the maximum result has been accomplished. Wide migration of rats occurs largely by ships, a relatively very small number traveling overland by trains. The frequent periodic fumigation of ships, the breasting-off and rat-guarding of nonfumigated vessels, and the inspection of outgoing and incoming cargoes will, to a considerable degree, control wide rodent migration. The ratproofing of buildings used by man for any purpose whatsoever will keep rodents out of intimate association with man. For this purpose impervious material, such as concrete, brick, stone, and tile, have their architectural application. During the presence of a plague epizootic the extermination of rats by traps, poisons, and separation from food supply so diminishes the density of the rodent population as to limit the spread of the disease from the sick to the well, and thus the disease automatically dies out for want of infectible material. This in effect is the dilution of the infectible material. At the same time the laboratory examination of captured rodents affords an accurate guide as to the centers of rodent infection and permits the application of intensive preventive methods so that the disease may be stamped out among rats before opportunity has occurred for it to be transmitted to man.

In the presence of an epidemic, every measure which will protect man should be taken. Among these is immunization against the disease after the method of Haffkine. This is of doubtful applicability in American cities. It could never be made mandatory, and those persons who volunteer for such inoculations do not form the class which is most liable to receive the infection. This method has not proved useful in large eradicative measures, it having been found more practicable to limit the operations to rodent extermination and the exclusion of this species from the home of man.

ABSTRACT OF DISCUSSION

DR. WILLIAM C. HASSLER, San Francisco: The paper gives us a very clear insight into the animals which are carriers of this disease. The point that I was particularly interested in was the matter of prophylaxis. I was the first one to receive a dose of Haffkine serum here in 1900. I was then acting chief sanitary inspector of the health department. We tried to impress its harmlessness on the Chinese population here whom we then had in quarantine. It was all right as long as they saw us getting the dose, but a few days later when we came to demonstrate the harmlessness of it, and our arms were swollen about the bigness of a goose egg, we had great difficulty in inducing them to submit to the measure. It would not work and we had to adopt other measures. Nevertheless, it is a safeguard, and one which can be used and has its value under certain conditions.

DR. W. C. RUCKER, Washington, D. C.: It may be of interest to this section to learn a little bit about the results of the campaign against plague in New Orleans. New Orleans is today 75 per cent. rat-proof. The probabilities are that there will be 15 per cent. of the city which cannot be rat-proof for several years. There therefore remains only 10 per cent. to be done. This is being accomplished. Up to the present we have captured in the traps alone over 375,000 rodents. They are being taken at the rate of about 1,100 per day. Of these, 247 have been found infected, the last one having occurred on June 11. We are now getting plague rats at the rate of one out of over 21,000. They uniformly come from buildings and premises which are not rat-proof. There were thirty human cases, of which nine patients died. The probabilities are that had it been possible to give all of those patients the serum treatment very early and in large doses, the mortality would have been very much lower. The epidemic began in the early part of June, and the last human case occurred Oct. 4, 1914. An extensive out-going quarantine was established in order that the port might be kept open. Vessels were fumigated with either sulphur or carbon monoxid or hydrocyanic gas in order that they might leave freely. Every package of freight was inspected before it was put on the ship. Every freight car that left the city was inspected to determine its rat-proof and free condition; all freight was inspected before being loaded, and was then loaded under the eye of an inspector.

The car was then sealed with a lead seal bearing some device, and there was a large sign posted on the side of the car, "This car certified as to its rat-proof and free condition providing the seal remains unbroken." As a result, freight, both by maritime and overland routes, moved freely and continuously to and from the city of New Orleans. In this work we rat-proofed some 30,000 cars alone; and in the fumigation of ships we consumed for the carbon monoxid fumigation about a million and a half pounds of coke. There was established early an inspection of the dead in order that all cases might be found, and this inspection continued until it was very clearly demonstrated that no more human plague existed. All of the rats were identified as to sex and species; and in this connection I desire to point out a very interesting gage on the value of your work. If you are carrying on a rodent extermination campaign, it is interesting to have a check by means of which you may know whether you are really killing rats. The trapping of mice in a campaign is entirely incidental. You do not aim to catch mice; and in the beginning of the campaign it will be found that the number of the true rats will be very high, something like 91 per cent. of the entire catch. If you will plot those on a chart you will find, if your work is successful, that there is a steady fall in the number of true rats, and that there is a steady rise in the number of mice, until you come to a point, as we did away along last December, where the mouse line has passed and far exceeds the rat line. In other words, you have been killing off, if your work is successful, the natural enemies of the mouse, and the mouse is therefore able to come out and get into your traps. We have in our exhibit at the exposition a very good chart showing this very simple point.

My paper, I feel, has been trite, but I think that it is a wise thing to tell the story over and over again, that so long as you have rats you are liable to have rodent infection, and that so long as you have rodent infection you are liable to have human infection and plague.

URINARY ANTISEPSIS

A CLINICAL AND BACTERIOLOGIC STUDY *

FRANK HINMAN, M.D.

SAN FRANCISCO

Urinary infection is the most frequent of genito-urinary disturbances. Sometimes it is the primary and principal disease, but more often it occurs as an added and secondary burden, and whatever the abnormality it is always an imminent possibility. The significance of the condition is given unusual emphasis by a recent analysis of the postmortem records of the Johns Hopkins Hospital (1912-1914). These records show that the cause of death, in more than half of the fatalities in the urologic service, was an infection which, as indicated clinically in the histories and pathologically by finding cystitis, pyelonephritis or pyelitis, probably spread in every instance from the urinary tract. These and other facts emphasize the great danger of urinary infection, and the necessity for the development of a more efficient therapeusis. The object of this paper is to present a study of the limitations of the known urinary antiseptics, to correlate these facts with clinical conditions and to advocate a selective method of treatment. No specific treatment or method of treatment is known. An intelligent correlation, in each individual case, of antiseptic, bacteriologic and clinical facts offers a scientific and rational method of attack.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* On account of lack of space this paper has been abbreviated for THE JOURNAL. It will appear in full in the Transactions of the Section and in the author's reprints.

CLINICAL CONSIDERATIONS

From a clinical standpoint each case of urinary infection should be studied with regard to three causative factors: (1) the infecting agent; (2) the source and portal of entry of this infection and its character and degree of extension, and (3) the abnormal conditions of the genito-urinary tract which may be accessory to the prolongation or spread of the infection.

Bacteriology: A long list of organisms has been reported for urinary infections, but it is full of duplications under different names. Relatively few organisms are common invaders, and the relative frequency of their occurrence in different parts of the tract is fairly uniform (urethritis excluded). The colon bacillus is found in from 70 to 80 per cent. of renal infections. *Staphylococcus pyogenes albus* (rarely the *aureus* and *citreus*) is the next most common invader, being present in about 10 per cent. of the cases. Then come the *Streptococcus pyogenes* and the *Proteus vulgaris* in about equal frequency, followed by scattered reports of the gonococcus and typhoid bacillus. Other organisms appear in reports for a few cases only, and some of these are questionable. The findings for the bladder are not so uniform and a much greater variety of organisms has been reported. The colon bacillus occurs more often than all other organisms together, being isolated in from 50 to 60 per cent. of vesical infections. Excluding it and tubercle bacilli, the staphylococcus more than equals in frequency the occurrence of all other forms, of which the streptococcus and *Proteus vulgaris* occur most and about equally often. Then follow in relatively few cases the gonococcus, pneumococcus, *Micrococcus catarrhalis* and bacilli of the *faecalis alcaligines, enteritidis, pyocyaneus, typhosus* and still rarer aerobic and anaerobic forms. The relative frequency of occurrence of the tubercle bacillus is a matter of dispute but, probably, it is present in about 5 per cent. of all cases. These facts indicate that five organisms cover over 90 per cent. of urinary infections. These five are *Bacillus coli communis*, the staphylococcus, the streptococcus, *Proteus vulgaris* and the tubercle bacillus.

The Source and Extent of the Infection: The determination of the portal of entry of many infections is more a matter of conjecture than certainty; nevertheless, knowing the infecting agent and the extent of its activity, a very close deduction as to its source can be made. The great preponderance of colon infections emphasizes the importance of intestinal conditions. A colon cystitis of urethral origin is common in women, but in men who have retention or other local conditions which reduce the bladder resistance, a lymphatic borne cystitis is more common. In the absence of pronounced accessory factors or instrumental causes the urethral route is rarely followed by either colon bacilli or streptococci. *Proteus vulgaris* infections, however, are ascending in practically every instance and are prone to attack the bladder in old prostatics. Hematogenous infections of the kidney due to streptococci often follow scarlet fever, tonsillitis, furunculosis, etc. Staphylococci, being saprophytic inhabitants of the healthy urethra in 50 per cent. of men, have a common urethral entry. In view of the work of Rosenow and Warden relative, respectively, to streptococci and staphylococci, postgonorrheal prostatitis and seminal vesiculitis stand out as fertile sources of urinary infection from these organisms.

Accessory Factors to an Infection: The abnormal conditions of the urinary tract which may incite or

extend infection are well known. The difficulty comes in their recognition. Their correction causes the majority of infections to quickly subside. Obstruction in any part of the tract to a free urinary outflow is one of the most important of these accessory conditions. Other common abnormalties are the presence of foreign bodies, such as stone or tumor, and of diverticula. Injury to any part of the tract is frequently an inciting cause—injury from exposure, from the use of irritating drugs or following instrumentation, and possibly, in some cases, a reduction of resistance occurring with the continued presence of an alkaline reaction of the urine, either metabolic or from urea decomposition.

It often happens that an elimination of the source of infection and a correction of certain of the above abnormal conditions of the tract which are accessory to it will effect a cure of urinary infection without the use of antiseptics. Nevertheless, everyone has experienced clinical inability in these cases and it is needless to enumerate the many conditions in which antiseptics would be of value in addition to their great field of usefulness in prophylaxis. The above brief outline of clinical facts, however, emphasizes the great importance of never relying on antiseptics alone in the treatment of urinary infection.

TABLE 1.—GERMICIDAL POWER OF DISINFECTANTS

	Per Cent. 100 90 80 70 60 50 40 30 20 10	1:20 30 40 50 60 70 80 90 100	200 300 400 500 600 700 800 900 1,000	2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000 10,000 11,000 12,000 13,000 14,000 15,000
Mercuric chlorid				3 2 1
Mercury oxycyanid				3 2 1
Potassium mercuric iodid				1 2 3
Iodin water				a e
Bromin water				b e a e
Iodin and potassium iodid				2 3 1 a b c e
Potassium permanganate				b c 2 3 1
Quinone				i a
Silver nitrate			1 2 3	a b
Pyxol			1 2 3	
Lysol			b e	
Formaldehyd			1 2 3	
Hydroquinone			a b e	
Sulphuric acid			e b e	
Hydrochloric acid		b e		
Creolin			a b e	
Iodin tetrachlorid		b e		
Carbolic acid		1 2 3 a b		
Calcium chlorid		b e		
Turpentine		a b e		
Oxalic acid		b c e		
Menthol		e		
Thymol		e e		
Albargin		e b d		
Protargol	3 2	d 1		
Green soap		a b e		
Hydrogen peroxid	1 2 3			
Argyrol	3 2 1			
Chinosol		1 2 3		
Salicylic acid	c e			
Benzoic acid	a b			
Oil of sandalwood	1 2 3			
Lugol's solution	1 2			
Sozoiodol	1 2 a b e			
Ethyl alcohol	a b e e			
Glycerin	b e			
Boric acid		?		

FACTS REGARDING DISINFECTION

The disinfectant action of drugs, without entering into a discussion of theoretic details, is comprised under four general properties: (1) germicidal action, (2) bacteriostatic or antiseptic action, (3) biochemical reaction and penetrating power, and (4) toxicity. By germicidal action is meant the power of causing complete death of the organism. By bacteriostatic or antiseptic action is meant the power of inhibiting the growth of bacteria for the limit of time of exposure. Biochemical reaction refers to the stability or instability of some substances under different chemical influences, and their power of osmosis indicates penetrating action. By toxicity is understood both the general poisonous property and the local irritant action of disinfectants. The ideal drug, obviously, would have high germicidal and penetrating power with stable and nontoxic action. Unfortunately, no substance exhibits these properties effectually, and clinicians have come to use the better bacteriostatic substances almost to the exclusion of the pure germicides, except on the unbroken skin. The difference of opinion regarding the action of many disinfectants arises from the great difference in the methods of study, no standard of which has been satisfactorily established. Most investigators have been interested from a sanitarian standpoint; many for hand disinfection. The majority attempt comparison with phenol by establishing an "antiseptic phenol coefficient" which indicates germicidal power only, and for practical purposes has a very limited value. Few will advocate the use of even well-recognized disinfectants in such concentration as to give germicidal action in the limited time of exposure for purposes of urinary disinfection. Tables 1, 2, 3 and 4 will indicate the findings of personal laboratory tests, as well as those of others whose methods correspond:

Table 1, the germicidal power of disinfectants, indicates the highest dilution of the disinfectant in broth which will completely kill the organism in from fifteen to twenty minutes at 20 C. (68 F.), by the hygienic laboratory phenol-coefficient method.

The personal findings were: 1, *Bacillus coli communis;* 2, *Streptococcus pyogenes aureus;* 3, *Staphylococcus pyogenes albus;* 4, *Bacillus typhosus* (Hopkins).

The findings as reported by others are: *a, Bacillus coli communis; b, Streptococcus pyogenes aureus; c, Staphylococcus pyogenes albus; d, Gonococcus; e, Bacillus typhosus.*

Table 2, the bacteriostatic power of disinfectants, indicates the highest dilution of the substance in broth

which causes absence of growth in it forty-eight hours after inoculation, at 37 C. (98.6 F.), the inoculation of the broth dilutions being done with 5 drops of fresh twenty-four hour bouillon cultures of the organisms.

The personal findings were: 1, *Bacillus coli communis;* 2, *Streptococcus pyogenes albus;* 3, *Staphylococcus pyogenes albus;* 4, *Bacillus typhosus* (Hopkins).

Table 3, the stability of disinfectants, indicates the highest dilution of the disinfectant (in water, broth and serum) which inhibits the growth of the organism (*B. typhosus*) for forty-eight hours after inoculation at 37 C.

The pentrating power, after Harris' collodion sac method, and the toxicity of disinfectants were studied. The results regarding the previously mentioned four general properties of disinfectant action may be briefly summarized.

Table 4, the penetrating power of disinfectants, indicates the power of osmosis through thin collodion sacs (Harris' method). These sacs, containing fresh twenty-four hour bouillon cultures of *B. typhosus,* were immersed in broth dilution of the disinfectant and subcultures were made from these sacs to broth tubes every ten, twenty and thirty minutes and at the end of twenty-four hours.

TABLE 2.—THE BACTERIOSTATIC POWER OF DISINFECTANTS

	Percentage Dilution of Substance in Broth
	1:10 · 1:20 · 1:30 · 1:40 · 1:50 · 1:60 · 1:70 · 1:80 · 1:90 · 1:100 · 1:200 · 1:300 · 1:400 · 1:500 · 1:600 · 1:700 · 1:800 · 1:900 · 1:1,000 · 1:2,500 · 1:4,000 · 1:5,000 · 1:8,000 · 1:10,000 · 1:20,000 · 1:25,000 · 1:40,000 · 1:50,000 · 1:75,000 · 1:80,000
Mercuric chlorid	1 2 3
Potassium mercuric iodid	1 2 3
Chinosol	1 2 3
Formaldehyd	1
Potassium permanganate	3
Silver nitrate	1 2
Iodin and potassium iodid	1
Aluminum acetate	a b
Copper sulphate	b c
Carbolic acid	1 2 3 5
Boric acid	1 2

Toxicity of Disinfectants: Worth Hale has proposed a method for the determination of a "toxicity coefficient," on very much the same principle as the "antiseptic phenol coefficient." Two series of white mice are injected, with varying amounts of phenol in one and of the disinfectant in the other, to determine the least fatal dose of each drug, and the results are compared. For some coal tar products he found the following values: phenol, 100 per cent.; tricresol, 90 per cent.; lysol, 45 per cent.; pyxol, 28 per cent.; creolin, 19 per cent. Clinically, however, the irritant character of a disinfectant more nearly determines its practical value, for the majority are used in such dilution as never to give general toxicity. The relative nonirritating character of potassium permanganate and formaldehyd in good antiseptic strengths explains their popularity.

SUMMARY OF FACTS REGARDING EXTERNAL DISINFECTANTS

The powerful germicides are few in number, of those studied only eleven (mercuric chlorid and oxycyanid, potassium mercuric iodid, iodin and bromin water, potassium permanganate, quinone, lysol, pyxol, silver nitrate and formaldehyd) being stronger than carbolic acid. The majority of these are toxic, irritating, or so weakened by chemical change when in contact with body fluids as to nullify their great germicidal power or to preclude their use in germicidal strength. The majority of them also have weak penetrating power. Iodin, potassium permanganate, silver nitrate and formaldehyd fulfil more nearly the four requirements, but it is more than likely that the great practical value of these substances is due to the fact that they all possess relatively high bacteriostatic action, for they are seldom if ever used in the strength of dilution necessary to give germicidal action in the length of time of exposure. Many of the weaker germicides (alcohol, protargol, etc.), because of such qualities as relative nontoxicity, good osmosis and stability, are often quite as valuable in practice. Substances with great inhibitory power but little germicidal action, such as oxyquinolin sulphate and some of the dye stuffs, have very little value for external treatments, the time of exposure being necessarily too short to give much benefit.

FACTS REGARDING INTERNAL URINARY ANTISEPSIS

The method of giving substances by mouth which will be largely excreted by the kidneys and then act as urinary disinfectants has wonderful possibilities in theory but is very imperfectly developed in practice. Substances so used must meet many limitations. They must be relatively nontoxic and nonirritating, of stable chemical composition, largely excreted by the kidneys, and of such powerful inhibitory effect as to act in weak dilution. Germicidal action is not necessary, as the ideal drug will keep the urine constantly antiseptic. None of the substances in use for this purpose meet these requirements. The approach of certain of the anilin dyes in many ways to the ideal insures persistent search with promise of ultimate success in the discovery of efficient internal urinary antiseptics. The value of the substances in common use for this purpose may be briefly summarized.

Limitations of Hexamethylenamin: Of all substances hexamethylenamin is the most efficient in the largest number of cases, but its limitations are so numerous and pronounced as to make its value felt only in selected cases, and it should not be given in the routine way that is at present almost universally practiced. It depends for its action on conversion in an acid urine into formaldehyd. Liquor formaldehydi, as shown in Tables 1 and 2, is a fairly good bacteriostatic and, therefore, well adapted for this purpose; but the splitting up of the drug into formaldehyd is dependent on certain factors which are not always present, so that good bacteriostasis is not always secured. Urinary acidity and the reaction time of the conversion are the two most important factors. The acidity of the urine

is influenced by both metabolic and bacterial changes. In the absence of bacteria the reaction is usually acid, and even when neutral or alkaline from either disease or diet, regulation of the latter and feeding acid-producing drugs, such as acid sodium phosphate or sodium benzoate, will quickly render it acid. When bacteria which break down urea into ammonia and thus produce an alkaline urine are present, regulation of the diet and the feeding of acid-producing drugs usually fail to make the urine acid. Under such conditions hexamethylenamin is useless. The *Bacillus proteus vulgaris* readily decomposes urea so that in most urinary infections from it the urine is strongly alkaline. Both staphylococci and streptococci are prone to decompose urea and the typhoid bacillus may sometimes break it up. *Micrococci ureae* are very active alkalinizers. But colon and paratyphoid bacilli probably never cause decomposition. In the presence of certain infections it is, therefore, not always possible to secure an acid urine.

The simple chemical change from hexamethylenamin into formaldehyd is slow and gradual and it is seen that, even with a uniform excretion, the longer the drug is allowed to accumulate in the bladder the greater becomes its concentration and the more complete its conversion. This necessary time factor completely nullifies the value of the drug as an internal urinary antiseptic in many urinary conditions. Polyuria and frequent urination prevent this accumulation, and the constant outflow from the kidney, except in hydronephrotic cases, accounts for the fact that the drug is of little, if any, value as an antiseptic at the level of the kidney. The same reason explains the poor results in cases with retention catheter and in all cases with urinary fistulas. In postoperative prostatics, who particularly need an efficient urinary antiseptic hexamethylenamin is practically valueless until continence returns.

The value of hexamethylenamin is greatest as a bladder prophylactic before and following instrumentation, when the above mentioned urinary conditions are not present, and, inasmuch as formaldehyd is about equally bacteriostatic toward all organisms, the usefulness of the drug in this group of cases will probably never be supplanted.

Limitations of Other Internal Antiseptics: With the exception of some of the dyestuffs all other substances that have been used for internal urinary antisepsis may be very briefly disposed of. A glance at Table 1 will quickly indicate what might be expected from boric, salicylic and benzoic acids. Salol, because of its conversion into carbolic acid in the urine, has been advocated, but carbolic acid is a very weak bacteriostatic and, clinically, the results of the use of the drug support its bacteriologic worthlessness. The alkalies are equally inefficient. It has been repeatedly shown that colon bacilli will grow readily in alkaline mediums, and the use of alkalies in the treatment of colon infections is justified for symptomatic and palliative reasons and not for their antiseptic value. The iodids, because of their ready excretion by the kidneys and the high disinfectant power of iodin, have been proposed, but the occurrence of iodism and the lack of antiseptic power of the salts of iodin (potassium iodid, etc.), make of these substances a failure. Oil of sandalwood is a very weak antiseptic and has other objections. It may be said, therefore, that the only efficient internal urinary antiseptics are hexamethylenamin and certain of the anilin dyes.

The Value and Possibilities of Certain Dyestuffs: The development of knowledge concerning the selective action of certain anilin dyes (first pointed out by Rozsahegyi in 1887) has followed three general lines: that relating to vital staining, that relating to bacterial differentiation by means of special stains or medium impregnation (Drijalski, Conradi, etc.), and that

TABLE 3.—THE STABILITY OF DISINFECTANTS*

		Percentage Dilution of Substance
		1:1,000 · 5,000 · 10,000 · 15,000 · 20,000 · 25,000 · 30,000 · 35,000 · 40,000 · 45,000 · 50,000 · 60,000 · 70,000 · 80,000 · 90,000 · 100,000 · 150,000 · 200,000 · 250,000 · 300,000
Mercuric chlorid	Water	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 G G G G G
	Broth	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 G G G G G G G G G G G G G G G G G G G
	Serum	0 0 0 0 0 0 0 G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G
Silver nitrate	Water	0 0 0 0 0 0 0 0 0 0 0 G G G G G G G G G G G G G G G G G G G G G G G G G G G G G
	Broth	G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G
	Serum	0 0 0 0 0 0 0 0 0 G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G
Ammonia sol.		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 G G G G G G G G G G G G G G G G G G G G G G
Iodin water	Water	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 G G G G G G G G G G G G G G G G G
	Broth	0 0 0 0 G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G
	Serum	0 0 0 0 0 0 0 0 0 G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G
Formaldehyd	Water	0 0 0 0 0 0 0 0 G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G
	Broth	0 0 0 0 0 0 0 0 G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G
	Serum	0 0 0 0 0 0 0 G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G G

* In this table 0 indicates no growth after forty-eight hours; G, growth after forty-eight hours.

TABLE 4.—THE PENETRATING POWER OF DISINFECTANTS

Time of Exposure Before Transplant From Collodion Sac	Percentage Dilution
	90% · 80 · 70 · 60 · 50 · 40 · 30 · 20 · 10 · 1:20 · 30 · 40 · 50 · 60 · 70 · 80 · 90 · 100 · 200 · 300 · 400 · 500 · 600 · 700 · 800 · 900 · 1,000 · 2,000 · 3,000 · 4,000 · 5,000
24 hours	1-0 3-0 3-G 4-0 5-0
30 minutes	1-G 3-G 4-0 4-G 5-0 5-G
20 minutes	2-0 3-G 4-0 4-G 5-G 5-G
10 minutes	1-G 1-G 2-0 2-0 3-G 4-G 4-G 5-G 5-G

In this table 0 = a negative transplant; G = a positive transplant; 1, alcohol; 2, alcohol with 3 per cent. iodin; 3, phenol; 4, formaldehyd; 5, mercuric chlorid.

relating to antisepsis. The antiseptic action of certain dyes is remarkably pronounced, and this selective and specific property portends their great future importance as urinary antiseptics. Kriegler, in 1911, made note of the proportion between the basic nature and the germicidal power of dyes, and Browning and Gilman, in studying the selective action of dyes for different bacteria and the relationship of chemical structure to this action, found that the substitution of alkyl groups in the amido side-chains of the unsubstituted triphenylmethane compound, pararosanilin, which has weak bacteriostatic action, lead to the most powerful bacteriostatic substance known for staphylococci, completely inhibiting their growth in a dilution of 1:5,000,000. This same dye, hexa-ethyl violet, must be in a strength of 1:20,000, however, to inhibit the growth of the *Bacillus coli communis*. The substitution of the ethyl group (C_2H_5) for the amino radicals in the unsubstituted diaminotriphenylmethane compound produces likewise an increase in bacteriostatic power. One such product, "brilliant green," is almost as strongly inhibitory for staphylococci and at the same time much more actively antiseptic toward the colon bacillus than hexa-ethyl violet. These same investigators made the interesting observation that serum modifies the antiseptic action of some dyes, as for instance, diminishing the action of hexa-ethyl violet slightly, of brilliant green considerably, but increasing that of diaminoacridin toward *B. coli*, and typhoid, staphylococci and anthrax. Recently Simon and Wood have shown that the antiseptic action of dyes is dependent, not at all on color, but on the presence of certain chemical groups which have basic properties, as, for example, the amino group (NH_2). It so happens that most basic dyes have right spectral colors, and most acid dyes, left spectral colors. By taking basic left spectral dyes (fuchsin, phenosafranin, tolusafranin, azin red, etc.) and acid right spectral dyes (indulin R., acid violet, urania blue, etc.) it may be shown that an acid dye, irrespective of color, is not bacteriostatic while basic dyes, likewise irrespective of color, may be bacteriostatic. It does not follow that all basic dyes have this effect. The replacement of the amino group by an acid radical—hydroxyl (OH) or carboxyl (COOH)—in an active basic dye leads to an almost complete loss of inhibitory effect. Of interest in this connection is the conclusion of Evans and Shulemann that the reaction of acid dyes in the body, when used as vital stains, is dependent on certain conditions of solution. They were able, for instance, to render a negative vital stain beautifully positive by changing its condition of solution (*Lösungszustandes*) thus disproving for acid dyes Ehrlich's side-chain theory. This may also explain the nonspecific nature of acid dyes toward bacteria.

The selective action of some of the common dyes has been more carefully studied. Churchman has shown that gentian violet will inhibit the growth of almost all gram-positive organisms in a dilution of 1:100,000, and that methylene blue, in the same dilution, is bacteriostatic for staphylococci. Lewis has emphasized the selective action of trypan red and of isamin blue for lesions of tuberculosis, and, following this lead, Krauss has since succeeded in preparing combinations of these dyes with iodin. Methylene blue has been shown also to have a selective action for tubercle bacilli. May studied the germicidal action of basic fuchsin which he found effective in a dilution of 1:1,000 within five minutes, toward bacilli of typhoid, colon, enterides (Gärtner) and dysentery and staphylococci. He also found that basic fuchsin is relatively nontoxic and very diffusible, and may be used in the bladder without irritation in a 1:100 dilution. May further made the important observation, which we have confirmed, of a marked difference in the action of fuchsin in warm and cold solutions, the dye being for the most part almost inactive in the cold. Dahlia has recently been advocated for infections, Simon using it in erysipelas and Ruhräh applying it in 4 per cent. strength to the throat. Many of the anilin dyes are quite toxic. Churchman found that the injection of 10 c.c. of a 0.5 per cent. solution of gentian violet in rabbits, was without effect in some but in others caused death within a few minutes, no explanation for which could be found at necropsy. Gentian violet is irritant in the bladder, in which it produces a considerable inflammatory reaction.

These facts, together with the known selective activity of the kidneys in the excretion of many dyes (phthalein group, indigocarmin, etc.), definitely link this subject to the future of internal urinary antisepsis. The application is necessarily limited, and each dye and all possible combinations, synthetic and otherwise, after the above biochemical indications, will have to be studied as to their power of antisepsis, their toxicity, irritant properties and stability in the body and their ready excretion in the urine. Undoubtedly substances exist, or will be formed, which will prove ideal for selected infections. Personal studies, limited by inability to secure dyestuffs and of which this report is preliminary, are briefly the following:

METHYLENE BLUE

The particular and limited value of methylene blue as a urinary antiseptic has never been emphasized. During the thirty years in which it has been used as a test of renal function, many facts regarding its excretion have been determined. Only about 50 per cent. of the dye is excreted by the kidneys, the remaining half being eliminated mostly in the stools, which often become as highly colored as the urine. The pigment is not an individual chemical substance (Underhill and Claussen) and often undergoes decomposition in its passage from the blood, appearing in the urine in the form of leukoderivatives which are, for the most part, nonbacteriostatic. (Mueller has found six of these chromogens.) These end split-products may often be restored to the basic methylene blue by agitation, or by boiling after the addition of acetic acid. Decomposition of the dye into chromogens may also occur as the result of bacterial activity. I have always observed a loss of color in solutions of the dye in which bacteria grow. The *Bacillus coli communis* will decolorize a 1:1,000 dilution but staphylococci will not cause loss of color until a dilution of 1:100,000 or greater is reached. This partial or complete bacterial decolorization is a frequent observation in patients with pyuria, the urine in such cases often acquiring only a dirty green hue even when large doses of the dye are ingested. Reactivation, or return to blue color, has often been beautifully observed when hexamethylenamin is given simultaneously. This result is probably due to the urine content in formaldehyd which has been found by test-tube experiment to usually reactivate the dye. The frequent presence, however, of an alkaline urine

from urea decomposition in these cases largely destroys the associated value of hexamethylenamin.

Subcutaneous injections of methylene blue are always painful. The dye may be taken by the mouth, however, in relatively large doses. Ten grains four times a day have been given, and have shown no toxic or irritating action. From 3 to 6 grains is a good average dose, but 1 grain is too small. The dye is contraindicated in large doses in cases in which there is severe nephritis, as it has been shown that the excretion of a small fraction of a grain in these cases may be prolonged for fifteen or more days.

Personal studies show that methylene blue is a very weak and slow germicide. It will not kill the staphylococcus, streptococcus or *Bacillus coli communis* under twenty-five minutes even in a 1:10 dilution, and even after forty-eight hours' exposure it shows little selective power as a germicide. As a bacteriostatic, however, it is very selective and powerful in its action. It completely inhibits the staphylococcus in a 1:150,000 dilution, the streptococcus in a 1:80,000, and the colon bacillus, however, in only a 1:1,000 dilution.

Clinical results support the bacteriologic findings. Inactivation of the dye from bacterial or metabolic decomposition greatly weakens its practical value. The clinical results in several cases of urinary tuberculosis, such as relief from urinary frequency and irritation, may possibly be accounted for by the observed selective action of the dye toward tuberculous lesions.

Other Anilin Dyes: In view of the unfinished investigation of the toxic and biochemical properties of other dye stuffs when applied as urinary antiseptics, reference will only be made at this time to their bacteriostatic power. Rosanilin acetate has a definite selective action toward staphylococci and streptococci, but its inhibitory power over the growth of colon bacilli is not much greater than its germicidal action for the same period of time. (Kills *B. coli* in forty-eight hours in a 1:800 dilution, but will not inhibit its growth in a weaker dilution than 1:1,000.) The action of this dye, as well as that of the others studied, was seen to be markedly influenced by temperature. There was a marked difference between the tubes kept at room temperature and those placed in the thermostat at 37 C.

CONCLUSIONS

The foregoing considerations and findings may be summarized as follows:

The treatment of urinary infection should be selective, according to the clinical findings in each individual case. The clinical study should determine the type of infection, its possible source and the conditions accessory to its spread or chronicity. The use of urinary antisepsis should always correlate these findings and supplement the necessary surgical or other measures.

Treatment by disinfectants may be external or internal. The properties required of a substance in order to give satisfactory external disinfection are a germicidal power which will kill the organism in the limit of time of exposure and with this, stability of chemical structure, penetrating action, but neither toxic nor irritating action. No such ideal substance is known. Because of this lack, clinicians have come to rely on strong inhibitory substances for external use. An internal antiseptic, which will give constant inhibitory effect, will be more efficient than an indifferent external germicide used periodically. The properties required of a substance for internal urinary disinfection are that it should be bacteriostatic in weak dilution, diffusible, stable, neither toxic nor irritating and largely eliminated by the kidneys. No such ideal internal antiseptic is known.

Hexamethylenamin is the most efficient in the largest number of cases, but has very definite limitations. It is of value only by virtue of its conversion into formaldehyd which takes place gradually in an acid urine. The alkalinity of the urine in infections which produce decomposition of the urea cannot in the majority of cases be changed by feeding acid-producing drugs. The necessity of concentration and time for the accumulation of formaldehyd in antiseptic amount largely destroy the value of the drug for kidney antisepsis, except in some cases of hydronephrosis; for bladder antisepsis in cases with polyuria or frequent urination, except when retention in some form is present; in cases of urinary fistula, notably postoperative prostatics during the period of incontinence, and in cases with continual bladder drainage as in true incontinence or with retention catheter; and for urethral antisepsis no matter what the infection. The greatest usefulness of hexamethylenamin is in bladder prophylaxis in cases in which the above urinary conditions are not present.

A study of the selective antiseptic action of some basic dye stuffs, their stability and pentrating action, the innocuous nature of many and the known proclivity of the kidneys for their excretion emphasize the future importance of such substances as internal urinary antiseptics. The bacteriologic findings with some of the substituted compounds of the rosanilin group indicate their possible application in the treatment of colon bacillus infections of the urinary tract. The selective action toward tuberculous lesions of trypan red and allied dyes opens up an interesting line of therapeutic application.

Methylene blue, in a dilution of 1:150,000 will inhibit the growth of staphylococci. It is diffusible and relatively nontoxic, but only about half of the amount ingested is eliminated by the kidneys and, often, some of this in the form of inactive end split-products. The absence of a deep blue urine indicates imperfect antisepsis, which may be due to this metabolic decomposition or to a delayed or deficient excretion as the result of renal disease, in which case continued use of the dye may cause severe renal injury. In the presence of urinary infection bacteria themselves may decompose the dye into these inactive chromogens. Formaldehyd tends to reconvert these less basic leukoderivatives into the original right-spectral dye, therefore, hexamethylenamin may often be advantageously given with methylene blue in these cases of bacterial decomposition of the dye; but the urine must be acid and in most of these cases there is an associated bacterial decomposition of urea which makes the urine alkaline. Doses of from 3 to 6 grains may be given four times a day for several days, when it is advisable to discontinue its use for a few days. The ability of staphylococci to adapt themselves to the presence of the dye shows the need of finding a substitute so that the two may be used alternately. The dye is of particular value in renal or bladder infections due to the staphylococcus, but is valueless in pure urethritis from whatever cause. The great

objection to its use is its disagreeable staining properties.

The value as internal urinary antiseptics of other substances such as salol, oil of sandalwood, salicylic, boric and benzoic acids, is very limited. Their use for antiseptic purposes in urethritis is not justified. Relief of urinary irritation is more often better secured by the use of sodium bicarbonate.

521-522 Physicians Building.

ABSTRACT OF DISCUSSION

DR. J. A. FULTON, Astoria, Ore.: Dr. Hinman omitted the mention of one germicide which I believe has not been sufficiently studied—that is, heat. It is true that you cannot apply heat, perhaps, to the entire urinary tract. In antisepsis of the bladder where you use an antiseptic such as methylene blue, potassium or permanganate, they do not penetrate, but heat will penetrate. I cannot understand why the question of heat as a germicide has not been referred to, because it does penetrate.

DR. MARTIN KROTOSZYNER, San Francisco: An excellent urinary antiseptic which Dr. Hinman did not mention is quinin, which in doses of 10 to 15 grains, if administered precystoscopically or preinstrumentally, exhibits excellent antiseptic properties, and, in this respect, according to my experience, exceeds the efficacy of equally strong doses of hexamethylenamin. With regard to the relative value of various external urinary antiseptic remedies, I have found it to be the wisest plan to limit oneself to the use of one or two drugs and to become sufficiently experienced in their efficacy in order to obtain uniformly good results. In my hands nitrate of silver has always exhibited better and more lasting results for lavage of the genito-urinary tract than any other silver component. Nitrate of silver has all the properties that Dr. Hinman considers to be essential for the efficacy of an external urinary antiseptic. It is penetrating, it is antiseptic and it is, besides that, flexible in its dosage, so that a patient who at first reacts very severely to a very weak solution gradually will tolerate injections of much higher concentrations. Thus, I have been able to obtain excellent results from renal lavage with solutions up to 2 and 3 per cent.

DR. W. F. BRAASCH, Rochester, Minn.: Silver nitrate is unquestionably a very valuable aid in the treatment of renal infection. Recently Geraghty called our attention to the use of a denser solution of silver nitrate, advising as high as 5 per cent. It has been my experience, however, that it is not necessary to use such dense solutions. It is best to commence with a solution, say 1:500 or 1:1,000 and gradually work up to 1 per cent. I think 1 per cent. is just as efficacious as 2 or 3 or 5 per cent. Five per cent. can cause considerable reaction; I have seen a number of cases that have given evidence of renal insufficiency as the result of a 5 per cent. injection of silver nitrate. It is difficult to understand why silver nitrate should be of so much more value in some cases of renal infection than in others. It has been my experience that silver nitrate is of value in the great majority of cases. We have recently reviewed several hundreds of cases and there were very few that were not benefited by its use, and many of them were evidently cured.

Whole-Time Health Officers.—You may ask if the small cities can afford whole-time men, why are the larger cities not employing whole-time men? I believe the answer is this —"politics." Apparently the only way a whole-time man should consider a position in one of the larger cities is to go as a loan from the State Board of Health, or from the United States Public Health Service. Under this system when it would seem advantageous he could return and a new man take his place.—Report of the Public Health Commissioner of the Minnesota Public Health Association.

LATE RESULTS OF EXCISION OF THE TRANSVERSE PROCESS OF THE FIFTH LUMBAR VERTEBRA*

FRED J. FASSETT, M.D.
SEATTLE

Notwithstanding the study given to the region of the lumbosacral junction in the past decade, so few reports of the results of excision of the transverse process have appeared that these three cases may be worth putting on record.

CASE 1.—A man, aged 34, formerly a sailor, now a book salesman, was first seen, April 4, 1910. His complaint was of a "binding" feeling and increasing pain of gradual onset from the hip to the heel on the back of the left lower extremity. He recalled no strain or other injury. The examination was negative except as follows: There was a marked tenderness at about the top of the left sacro-iliac joint, a moderate list to the right and muscle spasm limiting all motions of the lower spine; when the knee was fully extended the left hip could not be flexed more than 45 degrees.

The roentgenogram was negative except as to the transverse processes of the fifth lumbar vertebra; that on the left (the side on which there was pain) was of moderate size and its shadow did not, in this plate, overlap the ilium or sacrum. The process on the right was much larger, distinctly bifid and appeared to articulate with both the ilium and the sacrum (Fig. 1).

During the two months following this examination, adhesive strapping, a canvas belt, plaster jackets in the erect posture and in hyperextension, and plaster spicas were applied. Meanwhile the symptoms all increased. The pain became so severe and constant that the patient eagerly accepted the suggestion of operation even though he knew that it was decidedly experimental in character. At that time I knew that such an operation had been done by Dr. Z. B. Adams of Boston, but was unable to learn either his technic or his results.

Operation was performed in June, 1910. An incision about 4 inches long was made midway between the spinous processes and posterior-superior spine of the right ilium through skin, fascia, and muscle to the bone. It will be noted that this operation was on the side opposite to the side on which there was pain. We removed as much of the bony process which we encountered as we dared, considering that the work had to be done almost exclusively by the sense of touch. The fascia was closed with catgut and the skin with silkworm-gut. The patient was in the hospital ten days. The pain at night, which during the month before the operation had been the most distressing symptom, was temporarily relieved. The pain about the left sacro-iliac joint persisted. A roentgenogram taken two weeks after the operation showed that the transverse process had been possibly thinned but not removed by the operation.

In October, four months after the first operation, the old symptoms had all returned. October 18, a second operation was performed (Fig. 2). The incision was made nearer to the crest of the ilium than before. This made the approach to the transverse process more easy, but it was still very difficult. To serve as a landmark, the transverse process of the fourth lumbar vertebra was first identified and, because it might give more room, removed with a wire saw. The transverse process of the fifth was then exposed and an attempt made to pass a wire saw around it in the same manner but without success. The process was then freed from the ilium and sacrum by blunt dissection and from the vertebra by the chisel. At this point the fragment tipped forward on a hinge of fibrous tissue and was recovered and removed with great difficulty. During this procedure there were several sharp twitches in the muscles of the right leg. The wound was then closed as before. During the next ten days the patient became gradu-

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

ally more comfortable, except for slight muscular stiffness in the back and paresthesia in the right foot. The pain and stiffness decreased very rapidly so that the man was soon able to work. He has worked steadily during the past four years. I have seen him occasionally during that time. His only complaint is of a weakness in the right foot. This appears to be a slight but actual paralysis of the muscles of the anterior tibial group, for which no other cause can be found than trauma to the nerve roots at the time of operation. In spite of this symptom the patient regards the operation as a distinct success.

Case 2.—A man, aged 20, a shingle weaver, was first seen july 6, 1911. He gave a history of trouble with the back for the preceding two or three years. The disability had increased much more rapidly in the previous four months and had completely incapacitated him for work. The roentgenogram showed a transverse process of the sacral type on the left side of the fifth lumbar vertebra which formed a distinct articulation with the ilium. There was a marked scoliosis, left dorsal, right lumbar. It was impossible for the man even to approximate an upright position on account of the pain. There was distinct tenderness over the left sacro-iliac joint.

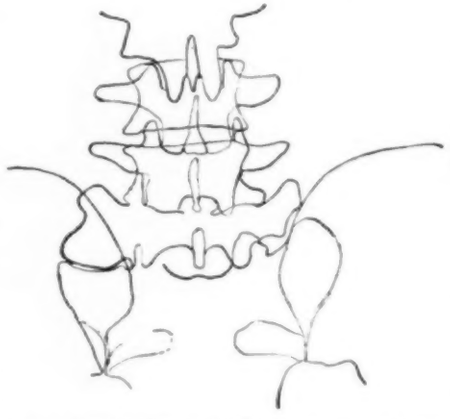

Fig. 1.—Appearance of right transverse process of fifth lumbar vertebra in Case 1 before operation.

On July 15, 1911, operation was performed essentially as in the second operation on the patient in Case 1, except that the operation was on the same side as the pain and the transverse process of the fourth was not disturbed. The roentgenogram taken soon after the operation showed that the transverse process of the fifth had been removed save for a narrow spur along the lower margin.

Clinically the pain was considerably relieved and the posture much improved. The man returned to work, but was unable to work all day because of the return of pain in his back. A year and a half from the first operation the symptoms were still present and a second operation was performed. During this operation there was distinct jerking of the leg muscles. Following the operation there was severe pain in the leg on the operated side. This gradually disappeared but there remained a partial paralysis and atrophy in the anterior tibial group of muscles of the left leg.

The man was last seen May 1, 1915, two and one-half years after the last operation. The pain has been wholly absent for more than two years; the posture shows no trace of the former scoliosis. The weakness in the anterior tibial group of muscles is still present, and the patient says that this occasionally troubles him in running. He regards this, however, as of very slight importance compared with the disability from which he was relieved by the operation. A roentgenogram taken six months after the operation and another taken this year are suggestive of partial regeneration of the process and raise the question whether this regeneration might be expected to occur.[1]

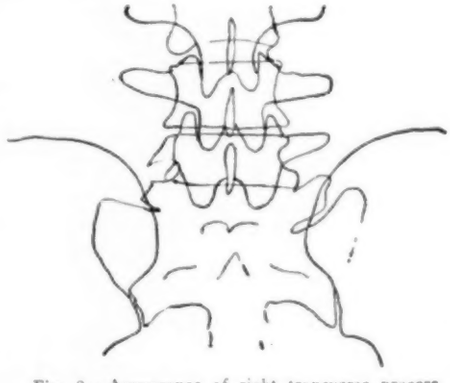

Fig. 2.—Appearance of right transverse process of fifth lumbar vertebra after second operation.

Case 3.—A man, aged 35, an electrician, was first seen Jan. 6, 1914. For several years, on making certain motions, he had "catches" in his lower back. These have several times been so severe that the patient was taken home in the ambulance. The examination was negative except as to the posture and as to the roentgenogram. The patient stood with an exaggerated lordosis, but no lateral deviation. When the lordosis was most marked, that is, when the patient wholly relaxed, there was slight pain in the middle line where the spinous process of the fifth lumbar appeared to overlap the spinous process of the first sacral. There was little muscle spasm, but previous experience had made the patient very loath to attempt certain movements, especially forward bending followed by rotation to the left.

The roentgenogram showed a fifth lumbar vertebra with transverse processes of an intermediate type, the shadows of which overlapped the shadows of the ilium in varying degrees in different plates (Fig. 3). There appeared to be no such complete articulation as was found in the preceding cases. All the customary methods of fixation were faithfully tried, but nothing short of a full-length plaster jacket was adequate to protect against the painful attacks. As this interfered seriously with the man's occupation, he sought relief from practitioners who promised more than I could conscientiously promise. One week later he was found in a hospital in genuine agony as a result of an osteopathic or chiropractic "adjustment" received the previous day. The patient had spent the night on the floor of the practitioner's office quite unable either to move or to be moved.

Two weeks later (April 1, 1914) operation was performed on the right side in a manner much like that of the second operation in Case 1. This operation was followed by almost complete sensory paralysis in the right leg. There was no loss of motor power. On the twenty-fifth day the pain was largely relieved and the anesthesia had given place to a paresthesia. The patient left the hospital, but used crutches for about ten days. During the summer, fall and winter of 1914, the patient was able to do hard work as an electrician, crawling into low and narrow spaces with no return of his old pain. The side of the back which was operated on has remained free from pain from that time until the patient was last seen, May 20, 1915 (Fig. 4).

In January, 1915, however, the patient worked for a long time leaning over a low railing. This was followed by a series of "catches" somewhat similar to the old ones, but less severe and strictly confined to the left (the unoperated) side. The patient had been so impressed by the relief obtained on the other side that he argued that the two sides looked so much alike in the roentgenogram that operation should be done on the other side as well. In preparation for this operation, some dissections were made with this problem in mind: Could an approach to the transverse process be found so that, guided by the sense of sight as well as touch, the operator might excise the bone? As a result of these studies a method was devised which was employed in the next operation, which was performed Feb. 2, 1915. A curved incision with its convexity outward was made from the second lumbar to the third sacral spine. The skin flap was reflected inward to the middle line. A muscle flap, consisting of the lower end of the erector spinae group and its aponeurosis, was detached from the crest of the ilium, the posterior surface of the sacrum and from the lumbar spinous processes and reflected upward. This left a fossa having for its walls the crest of the ilium on one side and the spinous processes and laminae

1. This man was a patient of Dr. Park Weed Willis of Seattle, who showed me the patient while under his treatment, and permits me to include the case in this report. This case and the preceding one were reported by Dr. H. B. Thompson in Northwest Medicine in 1913.

on the other; and for its floor the articular processes, and, at a much deeper level, the transverse processes of the fourth and fifth lumbar vertebrae. The transverse process of the fifth was separated from the vertebra with a chisel. It was found attached to the ilium by a strong fibrous band. As to whether or not anything representing a bursa was present, I am unable to say. The process was separated from the ilium and from the ligaments and from the layer of fat on its ventral surface by blunt dissection. The muscle flap was replaced and its aponeurosis was sutured in place with kangaroo tendon and heavy chromic catgut. The skin flap was replaced and sutured with silkworm gut. No fixation was applied.

The symptoms following this operation were less severe than those following the first. There was paresthesia but no anesthesia in the lower extremity, and the hospital stay was one week less than before. The convalescence appeared to be quite promising when on February 22 the patient slipped and fell backward, striking the exact center of the field of the second operation against the sharp corner of a heavy chair.

This was followed by severe pain and stiffness in the muscles of the back and an increase of the paresthesia and tenderness in the leg and foot. After a few weeks' rest, massage of the back was employed, which distinctly hastened the disappearance of symptoms both in the back and the leg. This man was last examined May 20, 1915 (almost four months after the last operation); he was just beginning to go without his crutches, and to do gymnastics, which he had found helpful in restoring his strength after his first operation. His greatest complaint at that time was of an intense tenderness and burning in the foot, but especially in the upper surface of the foot and the anterior surface of the leg.

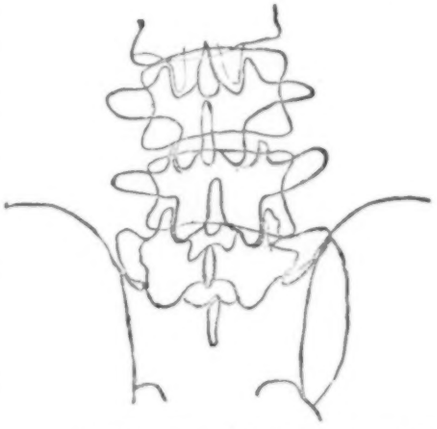

Fig. 3.—Appearance of transverse process of fifth lumbar vertebra in Case 3 before operation.

It is to be regretted for many reasons that the question of the relative merits of the two methods of approach has been beclouded by the unfortunate fall which marred what appeared to be an otherwise satisfactory convalescence.

COMMENTS

These three men appear to have obtained, through this operation, permanent relief from lumbar or sciatic pain which had not been relieved by a faithful trial of many other methods.

The difficulties and dangers of this operation are sufficiently great to cause it to be regarded only as a method of last resort.

The chief danger appears to lie in injury to the great nerve trunks, and of these, the trunk containing the fibers which go to the anterior tibial nerve appears to be particularly exposed. Since these fibers are usually traced to the first and second sacral nerve roots the reason for this vulnerability is not obvious.

The question of the mechanism by which the pain associated with these transverse processes is brought about has been the subject of considerable study. The fact that in one of the cases relief followed the removal of the process on the same side as the pain, and in another the removal of the process on the side opposite the pain, makes the theory of simple pressure of the process against the nerve trunk seem hardly adequate. The theory that the process furnishes a point about which, as a fulcrum, an extreme leverage is brought into play when the upper parts of the body start to rock on the lumbosacral joint, seems to me quite plausible. Such a leverage, in an unguarded movement, would strain every joint in its neighborhood including, of course, the sacro-iliac joints. It has been suggested that certain anatomic types are prone to lumbosacral trouble. Is it not possible that the unfortunate leverage above described is one very efficient means of straining the sacro-iliac joint? If it be this function of a fulcrum in which inheres the possibility of trouble, it would seem advisable not only to remove the part of the process in actual contact with the ilium, but to amputate the process as near the body of the vertebra as possible. In other words, it is desirable that even in the position of maximum lateral bending the process should be unable to touch the ilium or the top of the sacrum.

Fig. 4.—Appearance of transverse process of fifth lumbar vertebra in Case 3 after first operation.

At least four methods of approach to this joint have been suggested: the simple incision through the erector spinae muscles, the osteoplastic reflection of a portion of the crest of the ilium, the ventral route, and the muscle-flap method herein described. These three cases simply show that the process can be removed without serious damage by the first method or by the last. It would appear that a certain number of cases will present themselves in which the excision of the transverse process is the proper method of treatment. In view of this fact the question as to the best method of approach is one which is worthy of further study.

1163 Empire Building.

ABSTRACT OF DISCUSSION

DR. M. S. HENDERSON, Rochester, Minn.: While these spinal abnormalities are not common, they do occur in the cervical and in the dorsolumbar regions. In the fifth lumbar we frequently see a transverse process which is really an exaggeration of the costal process of the transverse lumbar vertebra. I think in the majority of cases they give no symptoms, but when definite and severe symptoms are present they should be operated on. I have seen probably thirty of these cases and operated on only three. My technic has been a little different from Dr. Fassett's, in that I have not considered it necessary to chip off the entire process, but simply knock off the exaggerated costal element of the transverse process so it would not impinge on the ilium. Whether this is sufficient or not, I cannot say, because my cases have not been numerous enough. One patient did not do very well. One, so far as I know, is cured, and the other is too recent to report as to the definite end-results; I operated on her only two months ago, but her pain has ceased. It is difficult to chip off the process, and I think Dr. Fassett's method of performing the opera-

tion is good. None of my patients has had disturbances of the nerve afterward, perhaps because I did not go far enough to remove the entire process. There certainly is a group of cases which should be operated on, but I believe the majority of cases, as in cervical ribs, give no symptoms, and probably should be let alone.

DR. E. W. RYERSON, Chicago: I have operated on only one of these patients, a woman from South Carolina, who had a very large bifid process. She had undergone two laparotomies on the left side and nothing was found, so that it was pretty evident she had a great deal of pain from this condition. I found the operation unusually difficult, but it was easy to get down to the process by making an incision well to the outer side of the erector spinae muscles. If one goes through the muscles not sufficient room can be gained, and it is not perhaps well to cut through such a large body of muscle; but going just to the outer side of the muscle the access is very easy to the outer part of this transverse process, although it is extremely difficult to get it out. In this operation I only got out the upper half of this bifid process. Nevertheless this patient was much relieved. She had paresthesia for three or four days afterward, but this entirely disappeared. Apparently she is at present free from symptoms. The difficult thing to understand is why removing the top of a bifid process which was not articulating with the ilium should do any good, but the fact is that it has relieved this patient. We do not know all about the nerve disturbances and nerve supplies, because, as Dr. Fassett said, the supply for the anterior tibial nerve comes from higher up; but the paresthesia my patient complained of was distinctly over the anterior tibial region. I cannot see how these patients can get more relief than by submitting to an operation, because they will not consent to wear through life a long plaster jacket or other apparatus.

DR. WALLACE BLANCHARD, Chicago: I reported at the last meeting of the American Orthopedic Association removal of the transverse process of the fifth lumbar vertebra that impinged on the wing of the ilium. It showed an elongation about twice the normal, as compared with the transverse process of the other side. A perpendicular incision of about 5 inches through the erector spinae muscles and direct down to the transverse process, removing by chisel and forceps, was not an overdifficult operation. The transverse process could be easily reached and removed. After resection the Roentgen ray showed a stump and a space between the stump and the wing of the ilium. There were no bad symptoms following the operation—of anesthesia, hyperthesia, etc., that have been told of by Dr. Fassett, and the patient made a good recovery. The patient had been paralyzed from the shoulder down through the left side to the left leg, and had had two abdominal operations, and the appendix had been removed, all in the hope of relieving painful conditions that were undoubtedly caused by the impingement of the transverse process and the ilium. The cure was immediate and there were no bad symptoms following the operation.

DR. ROLAND MEISENBACH, Buffalo: In connection with the operation for the removal of the transverse process of the fifth lumbar vertebra, a point that should be emphasized is that great care must be taken so as not unduly to divide nerve structures in the region of the lumbar plexus. I think that operation of these cases should only be undertaken in the severe type, and all other means should first be attempted to relieve the symptoms. There is one case that is of interest, which is rather unique, and which was sent to me for relief. It was a man of good musculature who had been employed at heavy work. At the time of the accident he was holding a rope taut. The rope suddenly parted and he was thrown backward to the ground. He complained of severe pain in the lower part of his back and was taken to the hospital. At the time I saw him, a few months after the accident, he complained of severe pain whenever he turned around in bed or attempted to walk, or on any lateral motion of the body. The radiograph showed that the transverse process of the fifth lumbar vertebra had been obliquely fractured and the fragments separated and displaced, so that the outer portion was drawn downward. A large callus had formed. This callus expanded and amalgamated with the ilium and the sacrum. To give the man relief it was necessary for me to remove the process, which was done. I think in general that a small incision should be made. By a small incision I mean after the first layer of muscles has been divided, and I also think it is much better to divide the muscle fibers with blunt dissectors until one reaches the transverse process. This minimizes the hemorrhage and facilitates the removal of the process. If the periosteal dissector or a chisel is used to peel the periosteum of the process, the chain saw may be brought around and the process removed. I think the use of a chain saw is much better than the use of a chisel, because with the chisel the process is brought out in a piecemeal fashion and there is more danger of injuring the structures. I wish also to emphasize the fact that just anterior to the process one is apt to meet nerve structures and ganglia that should not be touched with the instrument. In one instance I remember that the patient suddenly stopped breathing when these were touched, and I only mention it as a point of interest which should be kept in mind in removing the transverse process of the fifth lumbar vertebra.

DR. J. P. LORD, Omaha: I wish to report the development of pain on the second day of a recent case. The pain became progressively worse after twenty-four hours. Coming on so late, it occurred to me that it was induced by hemorrhages and infiltration. This might readily be imagined to take place because of the loose tissues in this region, the exudate enveloping these nerve trunks. There was muscle paralysis also, and this lasted for four or five days, when rapid improvement ensued. I would suggest this as a possible explanation of the pain.

DR. FRED. J. FASSETT, Seattle: There is only one thing to add, and that is on the matter of a choice between a chisel and the wire saw. With me it was not a matter of choice at all. I started in equipped with very little except my knife and wire saw, it looked so easy in the roentgenogram. But in none of these cases did I use the wire saw, except when I removed the fourth process. When it comes to the fifth, the passing of the wire saw around the neck of the process required more nerve than even I have developed.

ANALYSIS OF FOUR HUNDRED CASES OF LOBAR PNEUMONIA*

J. G. CROSS, M.S., M.D.
MINNEAPOLIS

There were 83,778 deaths from pneumonia in the United States registration area in the year 1913, or 132.4 deaths from this disease per hundred thousand population. In Minneapolis there were 348 deaths from the same cause, or 104 per hundred thousand population. For comparison, in the same year 80,812 persons died from pulmonary tuberculosis in the United States registration area, or 127.7 per hundred thousand population. In Minneapolis there were 383 deaths from pulmonary tuberculosis, or 118 per hundred thousand population. In 1914 there was an increase in the death rate from pneumonia and a decrease in the death rate from pulmonary tuberculosis.

These figures are presented to fix our attention again on the importance of pneumonia. With cancer and pulmonary tuberculosis it forms a dread trio. The death rate from pneumonia has not decreased. In some localities statistical observation shows that not only is pneumonia on the increase but in certain out-

* Read before the Minnesota State Medical Association, Rochester, Oct. 1, 1915.

breaks it is actually more fatal than it was in former periods of time. From the figures given above it would seem that less advance has been made in the prevention and treatment of pneumonia than in prevention and treatment of tuberculosis.

In an attempt to study certain features of pneumonia, data in a large number of cases of lobar and bronchopneumonia at the Minneapolis City Hospital for the years 1911, 1912, 1913 and 1914 have been collected and analyzed under the headings of age, sex, occupation, date of onset, character of onset and initial symptoms, later symptoms, the maximum temperature, laboratory findings, physical findings, the white blood count, the complications, the termination, whether by death, lysis or crisis, and necropsy findings, if a postmortem examination was made. This analysis has borne out many conclusions which are not new, and has verified some impressions which needed the corroboration of actual statistics. In the present paper I intend to present an abstract of the results of this analysis as regards lobar pneumonia alone.

As will appear in a later statement as to the time in the disease at which patients are admitted, it is evident that the mortality of lobar pneumonia at the City Hospital is much higher than it would be under

TABLE 1.—MORTALITY STATISTICS

Causes of Death	U. S. Registration Area, 1913		City of Minneapolis			
			1913		1914	
	Number	Per 100,000	Number	Per 100,000	Number	Per 100,000
All causes	890,848	.....	3,862	.....	4,115	.....
Pulmonary tuberculosis	80,512	127.7	383	118	385	112.09
Pneumonia	83,778	132.4	348	104.3	433	126.06
Cancer	49,928	78.9	276	81.9	311	90.5

average conditions in private practice. Several factors contribute to this. First of all, the City Hospital admits that large class of homeless or destitute patients who are careless of the onset of an acute disease. It is the rule that these people neglect the first few days of an acute illness until compelled to seek help through inability to care for themselves. Many patients are weakened by bad hygiene or vicious habits, together with irregular, too little or improper food. Many are chronic alcoholics. Acute alcoholism also plays a larger rôle than would be the case in the same number of private patients. Another factor in the free hospital treatment of pneumonia, as in other diseases, is the frequent lack of intelligent cooperation on the part of the patient. Ignorance of disease and fear undoubtedly have a great deal to do with the outcome.

Another striking fact brought out is that not only do the number of cases vary in different seasons and the same season of different years, but the mortality is much greater sometimes than at others. This difference in mortality has not been satisfactorily explained and is probably due to the combination of a number of causes rather than to any one variable factor. There is undoubtedly a difference in the virulence of the pneumococcus infection, but this alone does not explain the variations in mortality or the incidence of the disease. The undoubted fact that many people harbor the pneumococcus in their respiratory tracts, without becoming ill, shows that individual resistance plays a very great part in the number of cases in the presence of infection. The influence of season is, of course, apparent.

There were 369 cases of lobar pneumonia at the City Hospital in the four years 1911, 1912, 1913 and 1914. Of these, 117 patients died—a mortality of 31 per cent. Chart 1 illustrates the death rate at the ages from 1 to 5, 5 to 10 and then by decades. It was found necessary in analyzing the cases of children to separate those under 5 and over 5, the mortality was so strikingly different in the two five-year periods. As will be seen, the mortality in the succeeding decades rises steadily and consistently.

In Chart 2 is shown the termination of the cases in which the patients recovered by lysis or crisis, according to the same age periods.

As to the day on which crisis took place, we find a surprising condition of things in this series of cases. There were 125 cases in which the exact date of onset of the disease and the time of crisis could be determined. It is found that there is no regularity in the time at which the crisis occurred. Table 2 illustrates this fact. It will be seen that while in 80 per cent. of the cases the crisis occurred before the tenth day, in seven cases it fell on the tenth; in nine, on the twelfth; in six, from the seventeenth to the twenty-first day, and in two was delayed until one month after the onset.

In 264 cases the initial symptom was definitely known (Table 3). In 121, or 46 per cent., a chill ushered in the disease; next most common was pain in the side, back or chest; thirty-eight cases, or 14 per cent., had this first; in thirty-three, or 12 per cent., a cough was the first thing evident; in twenty-one, or

TABLE 2.—DAY OF CRISIS AFTER ONSET IN 125 CASES OF LOBAR PNEUMONIA

Days After Onset	No. of Cases
3	12
5	23
6	4
7	24
8	22
9	16
10	7
12	9
17 to 21	6
1 month	2

TABLE 3.—INITIAL SYMPTOM IN 264 CASES OF LOBAR PNEUMONIA

Symptom	No.	Per Cent.
Chill	121	46
Pain	38	14
Cough	33	12
Headache	21	7
Vomiting	12	4
Fever	12	4
Other symptoms	27	10

7 per cent., it was headache; in twelve, or 4 per cent., vomiting was first noticed; in twelve, or 4 per cent., fever only, and other symptoms of various nature in twenty-seven cases, or 10 per cent. These symptoms naturally occurred in combination or one rapidly following the other, but it is intended to note in this connection only that which first called the attention of the patient to his abnormal condition.

Examination of the urine (Table 4) shows the presence of abnormality in 237 of the 369 cases. This does not mean, however, that the remaining patients did not have abnormal urine findings. Many of our patients came in moribund, and for that or some other reason the urine could not be obtained in every case. In the 237 cases, however, sixty-one, or 25 per cent., showed the presence of albumin; twenty-seven, or 11 per cent., showed casts in the urine, and in 149 cases, or 63 per cent., both albumin and casts were present.

It is interesting to note the location of the consolidated area in the lungs (Table 5). In 333 cases this has been recorded. In thirty-one, or 9 per cent., the consolidation was in the right upper lobe; in ninety-nine, or 29 per cent., in the right lower lobe; in ten, or 2 per cent., in the right middle lobe; in twenty-one, or 6 per cent., in the left upper lobe; in eighty-nine, or 26 per cent., in the left lower lobe. The entire right lung was involved in seventeen cases, or 5 per cent., the entire left side in eleven, or 3 per cent. The notation of "double lobar pneumonia" is made in twenty-nine cases, or 8 per cent. In twenty-six cases, or 7 per cent., no area of dulness could be made out.

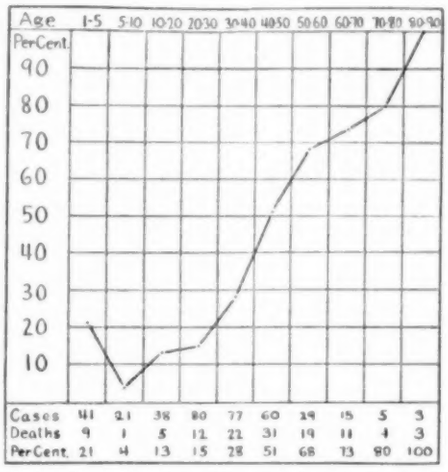

Chart 1.—Deaths from lobar pneumonia by age decades.

TABLE 4.—EXAMINATION OF URINE IN 237 CASES OF LOBAR PNEUMONIA

Findings	No.	Per Cent.
Albumin present only	61	25
Casts only	27	11
Both albumin and casts	149	63

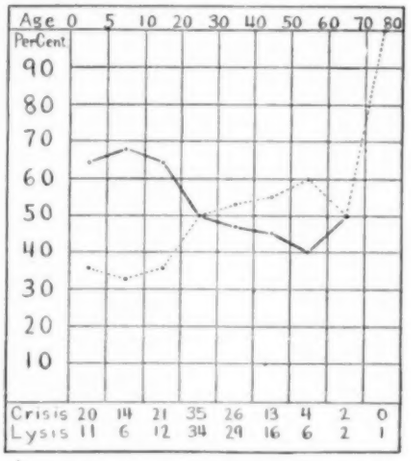

Chart 2.—Termination in 369 cases of lobar pneumonia by lysis and crisis; solid line, crisis cases; broken line, lysis cases.

TABLE 5.—LOCATION OF CONSOLIDATION IN 340 CASES OF LOBAR PNEUMONIA

Location	No.	Per Cent.
Right upper lobe	31	9.2
Right lower lobe	99	29.2
Right middle lobe	10	2.9
Left upper lobe	21	6.2
Left lower lobe	89	26.2
Entire right side	17	5
Entire left side	11	3.2
Double lobar	29	8.5
No area of dulness	26	7.5

These figures agree in the main with those of Preble's 9,333 cases collected in 1904.

It is found in the foregoing that in 67 per cent. of the cases the leukocyte count ranged between ten and twenty-five thousand, as given in Table 6.

Leukocytosis in lobar pneumonia deserves consideration. In this collection of cases an attempt was made to discover the relation, if any exists, between the number of white blood cells and the course of the disease. For this purpose, cases with complications, especially suppurative conditions, were excluded. Children under 14 years of age were also excluded. Those remaining were classified according to the number of leukocytes found, without regard to age, amount of consolidation, or other conditions. As will be seen from Table 7, the six groups have been made according to the number of leukocytes and the percentage taken of cases in each group, which ended in lysis, crisis or death.

A study of Table 7 presents some interesting features. The selection of uncomplicated cases does not, of course, give the same percentage of deaths or termination of lysis or crisis, as does the whole series of cases, including complications and all ages. It is seen at once that a leukocytosis under 10,000 gives 33⅓ per cent. of deaths, which is in accordance with our general knowledge that a low resistance with low leukocyte reaction gives an unfavorable prognosis. We find again that a white count between ten and fifteen thousand or between twenty and twenty-five thousand gives us nearly the normal rate of mortality, namely, 22 and 24 per cent. Between fifteen and twenty thousand leukocytes strangely seems to give a lower mortality, for which no explanation is offered and which may mean nothing. With the higher white counts above 25,000, the mortality is lower by one half, being only 11.3 per cent.

TABLE 6.—LEUKOCYTE COUNT IN LOBAR PNEUMONIA

Count	Per Cent.
Under 10,000	9
Between 10,000 and 15,000	30
Between 15,000 and 20,000	22
Between 20,000 and 25,000	21
Between 25,000 and 30,000	10
Between 30,000 and 35,000	3
Between 35,000 and 50,000	1
Above 50,000	2.5

It may be concluded then, as far as mortality from lobar pneumonia is concerned, that the higher the white blood count the better the prognosis, and that a count of 25,000 or over is decidedly more favorable than under 25,000.

We next notice that the proportion of the cases terminating in lysis and crisis is rather uniform until the white count reaches 20,000 or over. Between twenty and twenty-five thousand an equal number of

cases ended in each way. Between twenty-five and thirty thousand there is a decided preponderance of cases ending in lysis in the proportion of 1:2. When the white count is over 30,000, however, this proportion is almost exactly reversed, there being 33⅓ per cent. ending in lysis and 55.4 per cent. in crisis.

As has been stated, many of the patients in this series were admitted at a relatively late date in the course of the illness. These might roughly be divided into two classes. In the first division are those patients who were admitted in the first acute stages and in another class those in whose cases recovery was delayed beyond the first two weeks and who were brought in later either for delayed resolution or some complication. Without, however, thus classifying them, we find that it is very rare for a patient with lobar pneumonia to be admitted before the third day after the onset, and that 70 per cent. of them are admitted on the third, fourth, fifth, sixth and seventh day in about equal numbers. The bearing of this fact in our mortality records is obvious.

An analysis of cases of bronchopneumonia was made at the same time as the lobar cases. As bronchopneumonia, however, presents such a different aspect and much more varied etiology and course, this abstract does not cover that class of cases.

TABLE 7.—RELATION OF LEUKOCYTOSIS TO THE COURSE OF LOBAR PNEUMONIA IN 184 CASES

No.	Leukocytes Per Cent.	Lysis Per Cent.	Crisis Per Cent.	Deaths Per Cent.
From 5,000 to 10,000...	9.8	38.8	27.7	33.3
From 10,000 to 15,000...	27	44	32	24
From 15,000 to 20,000...	26	41.6	39.1	18.9
From 20,000 to 25,000...	19.6	38.8	38.8	22.4
From 25,000 to 30,000...	7.6	57.1	28.5	11.3
30,000 and over.....	9	33.3	55.4	11.3
Totals	....	41.6	36.9	21.2

The average length of stay in the hospital of those patients with lobar pneumonia who recovered is between two weeks and one month, the larger number remaining about three weeks. It is impossible to go into the question of the complications in the present abstract. In many instances the connection between pneumococcus infection and the complications is not traceable, or at least was not followed out, and a discussion of the ordinary complications would take more time and space than can be expended in this connection. It may be mentioned, however, that the complications noted in the foregoing series included otitis media both with and without mastoiditis, phlebitis, empyema, myocarditis, acute corneal ulcer, decubitis, acute arthritis, all of the different forms of pleurisy, nephritis, meningitis, pulmonary abscess, bronchial asthma, gastro-enteritis, endocarditis and gangrene of the lung.

Donaldson Building.

Duration of Incubation of Syphilis.—One of the editors of the *Annales de Dermatologie*, G. Thibierge, publishes in the July issue a study of this subject. His data establish that in the vast majority of cases the incubation period ranges from fourteen to forty-two days, but that cases are on record in which the interval before symptoms developed was fifty, sixty and ninety days. He cites various authorities to show that the minimum seems to be ten days. In monkeys the range was ten to forty-nine. The average in man is between twenty-five and thirty days.

INFECTIOUS DISEASES

THEIR ADMINISTRATIVE CONTROL IN DIFFERENT CITIES OF THE UNITED STATES

S. DANA HUBBARD, M.D.
Chief, Division of Infectious Diseases, Bureau of Preventable Diseases, Department of Health
NEW YORK

The Department of Health of New York City, having made some changes in the rules and regulations regarding certain infectious diseases in order to be consistent with the teachings and opinions of members of the medical profession and the scientific knowledge of today, desired to ascertain the opinions of eminent sanitarians throughout the country regarding these matters.

A questionnaire was therefore sent to the health authorities of sixteen of the largest cities in the United States.

QUESTIONNAIRE

QUESTION 1.—What procedure have you regarding persons exposed to scarlet fever and measles and who are immune by reason of having had this disease?

A. Exclusion from place of business when connected with the sale or handling of dairy or food products.

B. Exclusion of children from schools, it being assumed of course that the patient ill with either scarlet fever or measles is practically and efficiently quarantined.

ATLANTA: A. Persons exposed to scarlet fever and measles must not handle food products offered for sale.

B. Children are excluded from school, but are allowed on the streets.

BALTIMORE: A. They must not remain on the premises in which there is a case of disease. If there is any doubt that this order will be carried out, the individual is prevented from attending to the food and dairy business.

B. If the children are removed to another house, then they can attend school.

BOSTON: A. Persons who have been exposed to scarlet fever and measles and who are protected by a previous attack of these diseases are not held under observation by this department unless engaged in the sale or handling of food or dairy products. If a case of scarlet fever occurs in the family of such a person, unless the patient is immediately removed to the hospital, persons in the family are forbidden to engage in the business of handling of food or dairy products. As regards measles, no action is taken. I am of the opinion that this disease cannot be carried.

B. Such children are not excluded from school.

CHICAGO: A. In scarlet fever we exclude the person unless residence is changed during quarantine. In measles, no.

B. In scarlet fever, yes, unless change of address and furnish certificate of attack from physician. In measles, no, provided a certificate of immunity from physician is furnished.

CINCINNATI: Quarantine for scarlet fever and diphtheria applies to all members of the family. We have an unwritten law that the breadwinner may continue his occupation, provided the patient is isolated and there is no contact.

A. If the parents are engaged in handling food or dairy products, patient must be removed to the hospital or the industry is closed.

B. In case of scarlet fever, diphtheria and measles, all children in the same family are excluded from school until the quarantine is raised by the health department. The history of a previous attack is not accepted as a sufficient reason that persons who have been exposed to scarlet fever, diphtheria or measles should return to school.

CLEVELAND: A. Persons exposed to measles and who are immune by reason of having had the disease are not excluded

from business of any character. Persons exposed to scarlet fever are excluded from business.

B. Children who have had measles may attend school from a house in which the disease exists. They may attend school after eight days after being exposed to scarlet fever, provided they leave the house harboring the disease.

Detroit: Persons exposed to scarlet fever or measles, and who are immune by reason of having had the disease, are allowed to go following the disinfection of clothing and an antiseptic bath.

A. Such persons are excluded from handling of food or dairy products during period of incubation.

B. Exposed immune children are not excluded from school provided they have been properly released, as above stated, and taken to another house.

New Orleans: A. If residing at infected premises, complete exclusion is required of such persons. If place of abode is changed to a noninfected one, no exclusion after certain sanitary precautions have been observed.

B. Same requirements are as given in preceding answer.

New York City: A. In measles, no. In scarlet fever, all food handlers stop work or change address.

B. If case is satisfactorily isolated, immunes may return to school at once.

New York State: A. When a case of scarlet fever or measles exists on any farm or dairy producing milk, cream, butter or other dairy products for sale, it shall be the duty of the physician in attendance to report immediately to the local health officer the existence on such farm or dairy of such cases. It shall be the duty of the health officer to report immediately to the state commissioner of health, by telephone or telegram, the existence on such farm or dairy of such cases, together with all facts as to the isolation of such cases, giving the names of the localities to which such dairy products are delivered.

When a case of scarlet fever exists on any farm or dairy producing milk, cream, butter, cheese or other foods likely to be consumed raw, no such foods shall be sold or delivered from such farm or dairy, except under the following conditions:

(a) That such foods are not brought into the house where such case exists.

(b) That all persons coming in contact with such foods eat, sleep and work wholly outside such house.

(c) That such persons do not come in contact in any way with such house or its inmates or contents.

(d) That said inmates be properly isolated and separated from all other parts of said farm or dairy, and efficiently cared for, and

(e) That a permit be issued by the health officer.

B. In cases of measles, schoolchildren are excluded until recovery and disinfection of person, at least ten days from onset. In cases of scarlet fever, at least thirty days and until discharges have ceased and disinfection of person.

Omaha: In scarlet fever, thorough fumigation of clothes, and a bath are required, and patients are obliged to leave the house in which the disease is quarantined or be quarantined there. In measles there is no restriction if the persons have had the disease.

Philadelphia: A. No person is permitted to go from the quarantined premises to engage in the sale or handling of food or dairy products. We do not permit immunes to remove to another residence after disinfection, etc., and to engage in the said business.

B. All those associated with schools, teachers, children or janitors, who have had scarlet fever, and are therefore immune, may, after an antiseptic bath and disinfection of clothing, remove to premises in which there are no children and may return to school in ten days after such removal on notice received from the bureau of health. If continuing to reside at home, they must not be readmitted until examination by an inspector and notice received from the bureau of health. In measles, such children after removal to premises at which there are no children may return to school fourteen days after such removal on notice received from the bureau of health.

Pittsburgh: In scarlet fever and measles, after removing from the house under quarantine to a house in which there are none but adults, they may continue their occupations.

A. Must remove from the place of quarantine, and, if a grocer, may after the expiration of eight days return to his work. If a dairyman, he must remain away from the dairy during the entire period of quarantine.

B. Thirty days for scarlet fever contacts and sixty days for patient. Measles, twenty-one days.

Providence: No person infected with or living in a family where there is typhoid fever, scarlet fever or diphtheria shall in any way handle or deliver milk or cream or shall serve as cook or waiter in any hotel, boarding house or restaurant. No person living in a family in which there is a case of scarlet fever shall attend school until the warning sign has been removed, or if the patient has died or been removed from the house, until one week after such death or removal. The health officer may enforce this rule against all persons living in the house. No persons living in the house, but not in the family in which there is a case of scarlet fever, shall attend school until one week after the case has been recorded and until such person has been found to show no symptoms of the disease, but any person who has previously had the disease may, at any time, be permitted by the health officer to attend school. No person living in a family where there is a case of measles shall attend school for fourteen days, except that this rule shall not apply to persons who have previously had measles.

St. Louis: Persons who are known to have had scarlet fever and measles, and who have been exposed to the contagion are not restricted in their school attendance or work, provided that the fact that they are immune by reason of a previous attack is certified to by a physician and provided that the person exposed to scarlet fever, and who is living in the same house with the patient, must have the clothing fumigated and change residence during the existence of the disease.

B. Children attending school and exposed to scarlet fever or measles, in a case of scarlet fever change their residence and fumigate their clothing, and are placed under daily inspection for a period of ten days. In measles they may attend school from the house in which the patient is, but must be under daily inspection.

St. Paul: Persons exposed to scarlet fever and measles and who are immune by reason of having had this disease are removed from the quarantined house after proper precautions. They are excluded from place of business when connected with the sale or handling of food or dairy products.

Washington: A. Persons residing in premises in which scarlet fever exists are prohibited, without a permit from the health officer so to do, from handling or selling of foodstuffs or dairy products so long as they continue to reside in the infected premises. This regulation practically excludes every person from engaging in the business referred, because of the very rare instances in which the health officer has issued permits in cases of this kind. This position of the health department is taken regardless of whether the person has or has not had scarlet fever. Persons who have been exposed to scarlet fever, and who do not reside in the infected premises are prohibited from engaging in the sale or handling of foodstuffs and dairy products for a period of seven days from date of last exposure, unless authorized by the health officer to do so. If they have previously had scarlet fever a permit is given them. Persons exposed to measles are not prevented from continuing their work.

B. In the case of scarlet fever, all children who reside in infected premises are excluded from school during the continuance of the case. If they have had scarlet fever they can return to school as soon as the disinfection has been completed; otherwise they are required to remain away seven days after completion of disinfection. Children who have been exposed but who do not reside in the infected premises

are given certificates to continue at school on presenting satisfactory evidence to the health department of previously having had scarlet fever. If they have not had scarlet fever they are excluded for seven days from date of last exposure. In the case of measles, all schoolchildren residing in the infected premises are excluded from school for twenty-one days from the onset of the illness, unless they can present evidence satisfactory to the health department of having previously had measles, in which event they are permitted to continue in attendance at school.

QUESTION 2.—What is your procedure regarding the termination of quarantine of diphtheria and the seeking of "carriers"?

ATLANTA: Quarantine for diphtheria is terminated either on a negative culture or by the physician in charge certifying that all clinical symptoms have been absent for a period of ten days. Carriers are not especially sought by the health department.

BALTIMORE: We determine quarantine after diphtheria when two negative cultures have been obtained from the patient and one negative culture from the other members of the household, taken by our own officers. "Carriers" in school are not sought for except when there is a sudden increase in the number of cases of diphtheria.

BOSTON: All cases of diphtheria are released after this department obtains two successive negative cultures from nose and throat. The last culture is to be taken by a physician from this department. If there is a history of previous sickness in the family or any history of sickness among schoolchildren, said suspects are cultured. If positive and no clinical symptoms of diphtheria, said cultures are tested for virulence.

CHICAGO: Terminate diphtheria on two negative terminal cultures from patient and one from each contact. Contacts' cultures are made at time diagnostic culture is taken; if positive, and there is no clinical evidence, are required to remain in quarantine premises as "carriers." At schools carriers are frequently sought for, and if positive the carrier is quarantined at home until negative culture is obtained.

CINCINNATI: Quarantine for diphtheria continues for fourteen days after disinfection of the premises by the formaldehyd method. The doctor announces the recovery of his patient and sends a culture; if the culture is negative, the district physician visits the patient and takes another culture; if this is negative, the premises are disinfected as stated above. If other members in the family have suspicious throats, cultures are made.

CLEVELAND: Quarantine diphtheria is terminated on the finding by the city laboratory of a double negative culture.

DETROIT: Children recovered from, or exposed to, diphtheria are allowed to return to school following two consecutive negative cultures. Quarantine of diphtheria is terminated either by two consecutive negative cultures or on the certificate of the physician after eight days that the patient has clinically recovered, and that he and all members of the family have been given an immunizing dose of antitoxin. Two negative cultures are required, as aforesaid, before allowing the children to return to school. Carriers are sought by cultures when two cases appear in a schoolroom or other public place.

NEW ORLEANS: Quarantine terminates when two consecutive negative control cultures have been obtained after clinical recovery. First control only may be taken by physician in charge. Controls to be taken forty-eight hours apart. First control not to be taken until seven days elapse from notification of case by physician in charge; all subsequent controls to be taken by physician from health office. Contacts are cultured in our search for carriers.

NEW YORK CITY: Quarantine terminated by receipt of two successive negative cultures, taken not less than twenty-four hours apart. Other children in family are cultured.

NEW YORK STATE: We require the quarantine of diphtheria until two cultures taken twenty-four hours apart are reported negative for the presence of diphtheria bacilli. If these persist in the throat that is normal in appearance for five weeks, the carrier is released on condition that he be very careful about coughing and sneezing in the presence of little children; that cultures be taken at intervals of two weeks until the throat is clear and that the health officer will advise us if secondary cases ever occur. This rule has been in force since the middle of last August, and up to the present time we have not heard of secondary cases occurring. In a few special cases, we have permitted the carriers, who were schoolchildren, to return to school, and the health officer in each case reports that no secondary cases have appeared.

OMAHA: All cases kept under quarantine until two negative cultures are obtained on consecutive days.

PHILADELPHIA: At the expiration of two weeks the patient must be pronounced free of disease by the medical inspector. Two negative cultures must be obtained from throat and nose on consecutive days. In every schoolroom in which a case of diphtheria is detected, and in every case in which diphtheria develops in a home, all direct contacts are cultured. Positive cultures, without clinical evidence, are excluded from school and placed in modified quarantine until the case is cleared up. Early last fall we started with a mild epidemic of diphtheria, and we believe that these methods greatly assisted us in overcoming the threatening spread of the disease.

PITTSBURGH: Quarantine terminated by field medical inspector when two negative cultures from the nose and throat have been secured at intervals of forty-eight hours. Carriers are determined by school medical inspectors. When daily bulletin shows that there has been a clinical case of diphtheria in any particular room, the entire room is cultured. Children absent from school with sore throats are cultured before they are permitted to return.

PROVIDENCE: The minimum period of isolation in diphtheria is until two negative cultures have been obtained from the site of the disease secured at least twenty-four hours apart.

ST. LOUIS: All cases of diphtheria are terminated by the attending physician, which termination is verified by this department by the securing of two negative cultures made on succeeding days. No systematic search for carriers is made outside of institutions, hospitals and homes.

ST. PAUL: Children are excluded from school for two weeks after having been exposed.

WASHINGTON: The quarantine in cases of diphtheria is terminated on one negative culture. While one negative culture is accepted from patients treated in their own home, which culture is usually only a throat culture, the department believes that two negative cultures are better, and in the cases treated in the isolation ward of Providence Hospital and coming under the supervision of the health department, two negative cultures are required before discharging patients.

While there is nothing in the laws or regulations authorizing the health department to take cultures from persons exposed to diphtheria, an effort is made to obtain such cultures whenever the consent of the individual can be obtained. In quite a few instances "carriers" have been found and isolated in the same way as those having clinical symptoms of the disease. This department makes no distinction, for purposes of isolation, between the "carrier" and the clinical case.

QUESTION 3.—Do you require a report from the municipal laboratory or do you accept the report of any laboratory regarding the presence of diphtheria germs?

ATLANTA: State or municipal laboratory analyses are accepted. We also put up placard on clinical diagnoses but ask for culture to confirm same.

BALTIMORE: From the municipal laboratory, except when the report comes in from the physician that it is positive.

Practically speaking, physicians leave everything in our own hands.

BOSTON: All cases must be released by our own laboratory.

CHICAGO: Yes, for terminal cultures; unless the *official report* of a high-grade laboratory is submitted. Our rule is to insist on a representative of this department taking the second terminal culture.

CINCINNATI: Examination for the presence of Klebs-Loeffler bacilli are made in a municipal laboratory and in the laboratory at the hospital for infectious diseases. We are governed by the reports of these two laboratories.

CLEVELAND: Reports from municipal laboratory only are accepted regarding the presence of diphtheria germs.

DETROIT: Report from municipal laboratory on release cultures is required. Also all release cultures are taken by board of health nurses.

NEW ORLEANS: We require a report to be obtained from municipal bacteriologists in any case of diphtheria before a sanitary release of infected person or premises is effected.

NEW YORK CITY: Report from municipal laboratory required.

NEW YORK STATE: The director of our laboratory inspects and qualifies certain laboratories throughout the state whose reports on cultures can be accepted without question.

OMAHA: Require report from municipal laboratory.

PHILADELPHIA: All official acts of this bureau requiring laboratory examinations are based on the findings of the bureau laboratory. In establishing a quarantine, however, we will place a case in isolation on the findings of any laboratory, but do not begin or end a quarantine except on the bureau laboratory diagnosis.

PITTSBURGH: We require a report from the municipal laboratory.

PROVIDENCE: We accept the result of bacteriologic examination from municipal, state and hospital laboratories. I have accepted the result of private work which only very rarely is offered here, but can readily conceive that it might be necessary to make a different ruling.

ST. LOUIS: All bacteriologic reports must be from the municipal laboratory.

ST. PAUL: Regarding the termination of quarantine of diphtheria and the seeking of "carriers"; culture of exposed taken; absence of Klebs-Loeffler bacilli.

WASHINGTON: The health department prefers to examine cultures in its own laboratory and by its own bacteriologist. It will, however, accept the report from a bacteriologist of recognized standing as such.

QUESTION 4.—Do you terminate the case on one or two cultures and do you require cultures from nose or throat, or both?

ATLANTA: We terminate the case on one culture from throat.

BALTIMORE: The physician in attendance sends in one negative culture, then notifies us that a house is ready for fumigation, and then our throat inspector visits the premises and takes the culture of all persons, including the patient; thus making two negative cultures of the patient and one of each of the household. The cultures from both the nose and throat are not done in routine practice. Ordinarily we are content with the cultures taken from the throat. One of our difficulties in taking the cultures from the nose in all cases is the very large percentage of contaminated cultures, which obstruct the possible presence of the diphtheria organism.

BOSTON: See answer to Question 2.

CHICAGO: Two cultures for patient and one for all intimate contacts. Require cultures from both nose and throat.

CINCINNATI: Cases of diphtheria are dismissed from the hospital after three negative cultures, taken from both the nose and throat. Cases treated in the home are considered well after two negative cultures have been taken, as described above.

CLEVELAND: Quarantine is raised only on the finding of two cultures on successive days taken from the nose and throat of patient.

DETROIT: When the case is terminated on cultures, two consecutive negatives are required from both nose and throat.

NEW ORLEANS: Case is terminated after two negative cultures have been obtained. Where clinical indications are present, both throat and nasal cultures are taken.

NEW YORK CITY: Two cultures, nose or throat, but should require from both.

NEW YORK STATE: The code requires that the patient should not be released until two negative cultures taken at least twenty-four hours apart have been obtained. We have always ruled that it was necessary that a culture be taken from the nose and throat each time, and that the patient should not be released until on two successive days no cultures are reported positive.

OMAHA: Cultures from both nose and throat, two cultures only.

PHILADELPHIA: The patient is excluded from school at least three weeks, twenty-one days, if the symptoms have entirely disappeared and examination of the nose and throat on two successive days show no diphtheria germs; that is, negative cultures.

PITTSBURGH: In terminating diphtheria our method is as follows: The attending physician sends cultures to the municipal laboratory until such time as he may get a negative, after which our field medical inspector calls to see the patient, taking a culture of nose and throat; also, taking cultures of other members of the family until cultures prove negative. If a schoolchild, he must again be cultured, before admission to school, by the school medical inspector.

PROVIDENCE: For the release of diphtheria we require two negative cultures from throat and nose, although the state board of health rule does not call for this. I consider nose cultures of great importance.

ST. LOUIS: Two cultures from the throat in ordinary cases. The same number from both the nose and throat when there is clinically a nose involvement.

ST. PAUL: The report from our own laboratory is required.

WASHINGTON: Cases of diphtheria are ordinarly terminated on one negative culture from the throat. In cases treated in the isolation ward of Providence Hospital and over which the health department has certain jurisdiction, two negative cultures are required before a patient is discharged. Cultures are not required from nose and throat.

QUESTION 5.—What period of quarantine, if any, do you have for diphtheria cases?

ATLANTA: No period of quarantine.

BALTIMORE: No fixed period. We frequently raise quarantine in less than ten days after the report of the case.

BOSTON: Until two negative cultures have been obtained. See answer to Question 2.

CHICAGO: Until two negative cultures from nose and throat on successive days have been obtained from patient and a negative culture from the close contacts.

CINCINNATI: As stated above, quarantine for diphtheria continues for a period of fourteen days after the completion of disinfection.

CLEVELAND: First cultures for release are taken immediately on the establishment of convalescence, that is, on the disappearance of constitutional symptoms.

DETROIT: Minimum periods of quarantine for diphtheria is eight days.

NEW ORLEANS: No period. See reply to Question 2.

NEW YORK CITY: No fixed period.

NEW YORK STATE: No period of quarantine for diphtheria.

OMAHA: Until we get two negative cultures.

PHILADELPHIA: At least three weeks—twenty-one days.

PITTSBURGH: Minimum period of quarantine fourteen days, or until released by a field medical inspector after one negative culture.

PROVIDENCE: See reply to Question 2.

ST. LOUIS: On the report of a case of diphtheria, an estimated quarantine of fourteen days is set. If the patient recovers and shows two negative cultures before fourteen days have elapsed, the case is terminated, provided no other children are in the house. If there are other children, the quarantine is held for the fourteen days.

ST. PAUL: The case is terminated on two cultures, from nose and throat.

WASHINGTON: Quarantine for diphtheria is not terminated until one or more negative cultures are taken from a patient. So long as the bacilli are found present, quarantine continues.

QUESTION 6.—What is your personal opinion regarding the exclusion from school of persons who are immune by reason of recently having had either scarlet fever or measles, and who have either of these diseases in their home, the patient being practically and efficiently quarantined?

ATLANTA: Personally, I am opposed to excluding such children from school.

BALTIMORE: While admitting that there is a possibility for a person to have scarlet fever or measles the second time, yet I consider that it is so infrequent that it does not increase the likelihood of the disease being spread, and if one is absolutely sure that the child has had measles or scarlet fever (and very seldom that a health officer can be so assured) and if the health officer can be well assured that the patient is practically and efficiently quarantined, then I consider that there is no danger in allowing the well children to attend school. However, we have to deal with the public, which unfortunately is made up of such a variety of characters, and all are not trustworthy; so we find it necessary to make a rule applicable to all alike, viz., the exclusion of the children from school so long as they remain in the house where the sickness is; otherwise, discontent is produced by A being allowed to do that which we will not allow B to do.

BOSTON: Children who are protected by a previous attack of scarlet fever and measles, if other members of the family are sick with these diseases, are readmitted to school if they can satisfy this department and comply with the regulations governing the admission of children to school.

CHICAGO: Measles immunes may go to school with safety to others from premises quarantined for this disease. Scarlet fever immunes should make a change of address, if permitted to attend school.

CINCINNATI: I believe that our quarantine with reference to measles is a relic of the dark ages. We should be governed by the researches of Anderson and Goldberg. In scarlet fever, I believe we are doing the right thing in applying the quarantine to all children in the same family. If those who have had an attack or others in the same family take shelter with friends or relatives and do not develop the disease, I think that they should be permitted to return to school. They must, however, maintain their residence at the new address until quarantine in the home is discontinued.

CLEVELAND: It is my opinion that there is no occasion for excluding from school persons who are immune by reason of recently having scarlet fever or measles, and who have either of these diseases in their homes, the patient being practically and efficiently quarantined.

DETROIT: There seems very little danger of transmission of scarlet fever or measles by persons known to be immune, if such persons are promptly removed from the quarantined premises.

SYNOPSIS OF 1915 QUESTIONNAIRE *

	Can Return to Work or Can Attend School																Personal Views of Health Officials		Quarantine Period for Diphtheria	Terminal Cultures Required in Diphtheria					Carriers Sought For	Examination of Cultures Compulsory in Municipal Laboratory
	At Once				At Once; After Change of Address				After Incubation Period of Disease and Removal to New Address				When Original Case Is Discharged from Quarantine				When Original Case Is Discharged from Quarantine and After Elapse of Incubation Period										
	Scarlet Fever		Measles		Scarlet Fever		Measles		Scarlet Fever		Measles		Scarlet Fever		Measles		Scarlet Fever		Measles		Should Immune Schoolchildren Be Excluded If Quarantine Is Efficient?			Two Negative	One Negative	None	From Nose and Throat	Intervening Period		
	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Food Handlers	Schoolchildren	Scarlet Fever	Measles							
Atlanta	...	...	...	...	...	...	...	...	...	.....	...	.....	X	X	X	X	...	...	...	...	No	No	None	...	X	...	...	0	No	Yes
Baltimore	...	...	...	...	X	X	X	X	...	.....	...	.....	...	...	...	...	...	...	...	...	Yes	Yes	None	X	...	...	...	0	No	Yes†
Boston	...	...	X	X	...	...	...	...	...	.....	...	.....	X‡	X‡	...	...	...	...	...	...	No	No	None	X	...	...	X	24 hrs.	Yes	Yes†
Chicago	...	...	X	X	X	X	...	...	...	.....	...	.....	...	...	...	...	...	...	...	...	Change address	No	None	X	...	...	...	24 hrs.	Yes	No
Cincinnati	...	...	...	...	...	...	...	...	...	.....	...	.....	X	X	X	X	...	...	...	...	Change address	No	14 days after disinf.	X	...	...	...	0	No	Yes
Cleveland	...	...	X	X	...	...	...	...	X	X	...	.....	...	...	...	...	...	...	...	...	No	No	None	X	...	...	X	24 hrs.	No	Yes
Detroit	...	...	...	...	...	X	...	X	X	.....	X	.....	...	...	...	...	...	...	...	...	Change address	No	8 days	X	...	...	X	24 hrs.	Yes	Yes
New Orleans	...	...	...	...	X	X	X	X	...	.....	...	.....	...	...	...	...	...	...	...	...	No	No	7 days	X	...	...	...	48 hrs.	Yes	Yes
New York	...	X	...	X	X	...	X	...	...	.....	...	.....	...	...	...	...	...	...	...	...	No	No	None	X	...	...	X	24 hrs.	No	Yes
Omaha	...	...	X	X	X	X	...	...	...	.....	...	.....	...	...	...	...	...	...	...	...	Change address	No	None	X	...	...	X	24 hrs.	No	Yes
Philadelphia	...	...	...	...	...	...	...	...	...	X	...	X	X	...	X	...	...	...	...	...	Change address	Change address	21 days	X	...	...	X	24 hrs.	Yes	Yes
Pittsburgh	...	...	...	...	...	...	...	...	X§	30 days	X§	21 days	...	...	...	...	...	...	...	...	Yes; provisionally	Yes; provisionally	14 days	X	...	...	X	48 hrs.	Yes	Yes
Providence	...	...	...	...	...	...	...	...	X	X	X	X	...	...	...	...	...	...	...	...	No opinion	No opinion	None	X	...	...	X	24 hrs.	NA‖	No
St. Louis	...	...	...	...	X	X	X	X	...	.....	...	.....	...	...	...	...	...	...	...	...	No	Yes	14 days	X	...	...	...	24 hrs.	No	Yes
St. Paul	...	...	...	...	...	X	...	X	...	.....	...	.....	X	...	X	...	...	...	...	...	Change address	Change address	None	X	...	...	X	0	Yes	Yes
Washington	...	...	X	X	X	X	...	...	...	.....	...	.....	...	...	...	...	...	...	...	...	Change address	No	None	...	X	...	...	0	Yes	No

* Procedure in different cities regarding persons exposed to scarlet fever and measles and who are immune by reason of having had either disease and who (*a*) are engaged in handling dairy or food products, or (*b*) attend school.
§ Grocer, work after eight days. ‡ Dairymen. † In part only. ‖ No answer.

Remarks.—You will doubtless notice that our method of terminating diphtheria quarantine is different from that usually practiced except in the case of schoolchildren. The alternative procedure, that of releasing all but schoolchildren after eight days on the certificate of clinical recovery and immunizing doses to all members of the family, was instituted Nov. 21, 1913, and is based on the theory that the number of carriers is so large as to make their sanitary control difficult or impossible. During the year 1913 about 280 deaths from diphtheria occurred in Detroit. During 1914, following the installation of this system, 157 deaths occurred. It must not be thought, however, that the reduction is entirely, or even in large part, due to the change in this system. Other factors were largely responsible.

NEW ORLEANS: Were I assured that effective quarantine was observed, I would unhesitatingly advocate the nonexclusion of such persons.

NEW YORK CITY: They should not be excluded.

NEW YORK STATE: We feel that well schoolchildren immune to scarlet fever should be excluded from school for one week if the disease exists in the home. During the patient's illness, the well schoolchildren should live with adult friends. After one week if still well, they may return to school but must continue to live with the adult friends until the patient has recovered. In regard to measles, we feel that immune schoolchildren in the household where a case exists need not be excluded from school at all.

OMAHA: Those with scarlet fever should be excluded from school but not measles. Do not think it safe for a child to attend school from a house where scarlet fever is quarantined, no matter how carefully the case is isolated.

PHILADELPHIA: We believe that many of the administrative difficulties that are encountered by health officers arise from the severe requirements imposed by existing laws on immunes. We are meeting increased resistance in this matter, due to exclusions from school, and believe that our procedure should always be in accord with the best medical information extant. That information certainly does not approve of the exclusion of immunes who come from houses efficiently quarantined. There are always practical considerations, however, which arise in each case, and we believe the best procedure for the present is for the immune to remove to premises free from disease.

PITTSBURGH: That child should be permitted in scarlet fever and measles to return to school after all discharges have ceased.

PROVIDENCE: I have no settled opinion as regards the admission to school of children from scarlet fever and measles families who themselves have previously had the disease. I think the danger of their carrying the disease is extremely small and we do not let children who have had measles go to school. I am experimenting with this disease because I doubt whether anything we can do really has very much effect on the prevalence of the disease. In regard to scarlet fever, I do not think there is any theoretical reason why children who have had the disease might not attend school, but I can see some administrative difficulties in determining whether they really have had it. I had such an instance yesterday in a family where the initial case had been removed to the hospital.

ST. LOUIS: I consider it necessary to exclude any child from school who is attending school from a house in which scarlet fever exists. I consider that it is safe to allow a child to attend school from a house in which measles exists. In event the scarlet fever exposed person changes residence, a ten days' daily inspection is necessary. Fourteen days' daily inspection is necessary in the child exposed to measles.

ST. PAUL: The period of quarantine for diphtheria cases is limited by bacteriologic findings. Schoolchildren may be removed from quarantined houses after proper precautions and sent to school. We, however, exclude for ten days according to state law.

WASHINGTON: I am of the opinion, from past experience, that little if any good has been accomplished by this department in attempting to prevent the spread of measles among schoolchildren, it being believed that the infection has already been communicated to other persons before the patient is known to be sick. A great loss of time from school studies was experienced by children exposed to measles, and on this account and the fact that such exclusion has in the past accomplished practically nothing, this department, about two years ago, permitted children who have had measles to continue in attendance at school, notwithstanding the fact that a case of measles was in the same house at the time. I doubt the wisdom of permitting schoolchildren from homes where scarlet fever exists to continue in attendance at school, even though they have previously had the disease, and this department does not permit this to be done. If it were possible to know with a reasonable degree of certainty that a patient suffering from scarlet fever was thoroughly isolated in every respect and those persons residing in the same premises exercised all precautions, it might be safe to allow children residing in such a home, and who have previously had scarlet fever, to continue at school; but as this department has no means of acquainting itself with what takes place in the private home of patients, and in order to safeguard to the fullest extent possible pupils in schools, no child living in a house where scarlet fever exists is permitted to attend school so long as they reside in the premises.

FORMER AND PRESENT PROCEDURES

The following parallel of former and present procedures is given in order to contrast and demonstrate concisely the method now in vogue in New York City. This method is felt to be both safe and consistent with accepted scientific knowledge and at the same time to avoid any unnecessary loss of school or working time.

MEASLES

Former Procedure	Present Procedure
All pupils in family excluded from school.	If case is satisfactorily isolated, immunes may return at once to school. Nonimmunes, on change of residence, may return to school fourteen days after last exposure. If isolation is not satisfactory, immune pupils, on change of residence, may return at once to school. Nonimmunes, on change of residence, may return to school fourteen days after last exposure.
Minimum isolation period, fourteen days.	Quarantine terminated five days after appearance of rash, provided all catarrhal symptoms have ceased and fever and rash have disappeared (not pigmentation).
Disinfection by fumigation.	Fumigation omitted. Disinfection by cleaning.
All cases kept under observation by irregular visits.	Cases divided into two classes: "observation," visited but once and terminated by family physician, and "supervision," closely supervised by field nurse.
All cases have homes placarded.	Placards posted in "supervision" cases only.

SCARLET FEVER

Former Procedure	Present Procedure
All pupils in family excluded from school.	If case is satisfactorily isolated, immunes may return at once to school. Nonimmunes, on change of residence, may return to school five days after last exposure. If isolation is not satisfactory, immune pupils, on change of residence, may return at once to school. Nonimmunes on change of residence may return to school five days after last exposure.

SCARLET FEVER—CONTINUED

Former Procedure	Present Procedure
Minimum isolation period, thirty-five days.	Thirty days.
Desquamation must be complete.	Not insisted on.
Use of elevator permitted only on entering apartment.	No elevator restrictions.
Disinfection by fumigation.	Fumigation omitted. Disinfection by cleaning or, when necessary, by repapering and repainting at expense of owner. Disinfection of all discharges and soiled materials and articles throughout progress of case.
No renovation placard.	Renovation placard posted until cleaning is performed.
Persons selling milk discontinue work or change residence.	All food handlers stop work or change residence.

DIPHTHERIA

Former Procedure	Present Procedure
All pupils in family excluded from school.	If case is satisfactorily isolated, pupils (and teachers) who have been immunized, and on whom "trial" cultures with negative result have been made, may return at once to school. If isolation is not satisfactory, pupils (and teachers) who have been immunized, and in whose cases "trial" cultures with negative result have been made, on change of residence may return at once to school. If not immunized, they can return to school only after lapse of seven days' interval and a change of residence and a "trial" culture with negative result.
Terminated on one negative culture.	Two negative cultures, taken at an interval of not less than twenty-four hours, preferably from both nose and throat.
Disinfection by fumigation.	Fumigation omitted. Disinfection by cleaning or when necessary by repapering and repainting at expense of owner. Disinfection of all discharges and soiled materials and articles throughout progress of case.
Persons selling milk discontinue work or change residence.	All food handlers stop work or change residence. If case is isolated satisfactorily, trial cultures negative and immunization performed, they may return at once to work.
Renovation placard not used.	Renovation placard posted until cleaning is performed.

It is, indeed, a pleasure to state that this questionnaire was promptly and most satisfactorily answered by all.

The opinions expressed by the different sanitarians endorsed the new procedures. While the experience in New York City has not covered a sufficient length of time to be conclusive, it has, however, been very extensive and so far has given general satisfaction.

Attention, however, might be called to the ultra-conservatism of some of the municipalities; the minimum isolation period for diphtheria in Detroit is established at eight days; in St. Louis at 14 days; in Philadelphia "at least three weeks"; and in Cincinnati the quarantine period continues for 14 days after termination of case and completion of disinfection.

Some cities accept reports of diphtheria without laboratory confirmation; definite periods of quarantine are set in several of the cities, whereas the presence or absence of diphtheria bacilli should be the determining factor, it is thought.

The methods of handling "contacts" and "persons exposed," as well as the seeking and handling of "carriers" varies widely.

In Pittsburgh, schoolchildren exposed to scarlet fever are excluded for thirty days, and a minimum period of quarantine of sixty days is established for the patient.

A synopsis of the variations is very interesting from this comparative point of view.

In the establishment of quarantine, the object is to keep the patient "in" and the public "out," without the imposition of unnecessary restraint. At no time must it be considered in the nature of a blockade.

In public health work no one plan will apply everywhere, and in no single method does success lie. Fear and superstition for ages held masterful sway in the control of the infectious diseases, but today we are ruled and guided by the light of knowledge, and the laboratory should be the determining arbiter of both custom and practice.

Sickness, by its mere presence, greatly disturbs and is an added expense to the home; when this sickness, in addition, brings to the home municipal control, it is not welcomed, as a rule, because the family feel that the numerous restrictions are not only burdensome but also unnecessary, and in this opinion they are not infrequently upheld by their family physician.

While no one knows the best, safest and most economical method of prevention and control of infectious diseases, it is appreciated that the most desirable system will be that which is most free from unnecessary restrictions and at the same time is consistent with demonstrated methods and scientific knowledge.

Mattress Sale Control.—Labor Commissioner John Price Jackson of Pennsylvania during October, 1915, issued instructions to inspectors to enforce rigidly in factories, cleaning establishments, wholesale and retail stores, the provisions of the acts of legislature that place under the jurisdiction of the department of labor and industry the manufacture and renovation, sale or resale of all mattresses. The sweeping character of the mattress act of 1913 and the enlargement of its scope by an amendment passed by the last legislature virtually prohibits the sale of any mattress that is not manufactured of approved material, thoroughly sterilized and disinfected and properly labeled. A resale of a mattress that has been used by a person having any infectious or contagious disease is forbidden and a resale of any mattress that has not been sterilized or disinfected is unlawful. The law declares a mattress to be any quilted pad, mattress, mattress pad, bunk quilt or cushion stuffed or filled with wool, hair or other soft material, except feathers, to be used on a couch or other bed for sleeping or reclining purposes, and further declares that no material may be used in the manufacture of a mattress if it has been obtained from any other mattress used by a person suffering from a transmissible disease. Scraps of old or worn clothing, carpets or other fabric of material known as "shoddy" are prohibited.

BLOOD CRYOSCOPY AND BLOOD UREA

A COMPARATIVE STUDY OF RENAL FUNCTION *

MARTIN KROTOSZYNER, M.D.
AND
GEORGE W. HARTMAN, M.D.
SAN FRANCISCO

Determination of renal function, as a routine preoperative measure, is undoubtedly responsible for the marvelous advance of renal surgery during the last two decades. By this means (in order to mention only two salient points) the recognition and operative treatment of incipient renal lesions, and nephrectomy in the presence of a diseased second kidney became well established and comparatively safe procedures. Owing, furthermore, to the important rôle played by the kidneys in systemic metabolism, the value of functional methods of examination as widening and intensifying the diagnostic and prognostic aspect of kidney affections became generally recognized. The diagnosis, finally, of degenerative lesions of the kidneys due to chronic urinary stasis, particularly in connection with prostatic hypertrophy, is only feasible on the basis of a careful study of renal function, which justly is considered the most important factor in the rapid reduction of the mortality rate of prostatectomy.

While thus determination of renal function now occupies an important place among clinical methods of investigation, there exists, nevertheless, a marked divergence of opinion with regard to the accuracy and diagnostic value of the various tests which, of late, have been devised in rapid succession.

CRITERIA FOR PRACTICAL VALUE OF TESTS

The main object in determining total renal function, so far as the surgeon is concerned, lies in the satisfactory answer to the cardinal questions: Does renal insufficiency exist preoperatively? If so, is it reparable? Is renal insufficiency likely to occur postoperatively? Information on these most important issues is sought by means of the various functional tests at our command, by measuring the quantity of substances which are either eliminated by the kidneys with the urine (tests of renal excretion), or which are retained in the blood as end-products of metabolism (tests of renal retention). Total renal secretory activity is measured either by determining the quantity of substances normally contained in urine (urea, diastase, etc.), or by introducing extraneous substances into the circulation (dyes, phloridzin), while renal retention of end-products of metabolism is determined by physiochemical tests (blood cryoscopy, blood urea, etc.).

No single test so far has been devised which fulfils all requirements, and only a few of the many tests recommended for clinical use are practically at the disposal of the surgeon.

A functional test, in order to become available for clinical purposes, must give quick and uniformly reliable results by a technic not so cumbersome, difficult or time consuming as to be prohibitive to the busy clinician.

SIGNIFICANCE OF TESTS

Viewed from this standpoint, almost all of the tests, based on excretion of substances normally contained in urine, have to be rejected, since the quantity of renal secretory activity is not determinable by the elimination of a single salt or enzyme, but by the excretion of substances which, being of intrinsic importance for metabolism, express the total sum of renal capacity. Thus, quantitative estimations of the twenty-four-hour urea output, carried out for a series of days under hospital regimen, may give an approximate idea of total renal function, and are, for a certain class of cases, like prostatics with retention catheter, of practical value. The amylase tests, on the other hand, dealing with a single ferment, must for the same reason be considered as of little practical value, a view which is substantiated by Rowntree and his collaborators,[1] who, on the basis of their comparative study with other tests, conclude that determination of diastatic activity often yields contradictory and unreliable results.

The use, for functional purposes, of extraneous substances which physiologically are not present in the circulation is subject to the same criticism. By this means, renal functional capacity is estimated by the ability of the kidneys to excrete a single dye or glucosid. Renal excretory capacity, though, is variable according to the substance by which it is tested, or, in other words, the kidneys work selectively and eliminate one substance better than the other. Thus it appears obvious that satisfactory permeability toward one dye cannot be considered as a uniformly correct index of the total sum of renal capacity. This fact alone should, in spite of the obvious practical advantages of the phthalein two-hour bladder test (ease of application, rapidity of elimination, quantitative colorimetric estimation of excreted dye), militate against the widespread acceptance of that test as the only means for determining total renal function.

More rational, therefore, because representing a general expression of total renal activity, are tests of retention, based on the quantitative determination of components of urine retained in the blood. Of this class of tests determination of the freezing point of blood (cryoscopy) appears to be the most comprehensive and, therefore, the most important method, since total secretory renal capacity is measured by determining the degree of retention due to renal insufficiency. This test has given us uniformly safe and reliable results substantiating the conclusions of our former publication on this subject.[2]

BLOOD CRYOSCOPY

Our technic for blood cryoscopy has remained practically unchanged. Through long practice we are enabled to keep the mixture of ice and salt at such concentration, as to insure a constant temperature of about —4 C. (24.8 F.) during the entire course of the test. Aspiration of the patient's blood with needle and pipet was lately adopted, as facilitating and shortening the time of blood taking. The average length of time of actual determination for water or blood is, at present, reduced to about fifteen minutes for either test. Bartley's[3] modification of cryoscopic technic, which we fully tested, was abandoned as neither

* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Rowntree, L. G.; Marshall, E. K., Jr., and Baetjer, W. A.: Further Studies of Renal Function in Renal, Cardiorenal and Cardiac Diseases, Arch. Int. Med., April, 1915, p. 543.
2. Krotoszyner, Martin, and Hartman, G. W.: Practical Value of Blood-Cryoscopy for the Determination of Renal Function, THE JOURNAL A. M. A., Jan. 18, 1913, p. 188.
3. Bartley: Arch. Diagnosis, July, 1913.

simpler nor more time-saving than determination with the ordinary Beckmann apparatus.

Since our last report 106 cryoscopic tests were made on 81 patients.

Of 66 patients with normal blood points, ascertained through 77 cryoscopies, 23 were operated on without death. The average point of these 23 patients was 0.557.

In 12 cases of incipient unilateral or bilateral kidney lesions of indefinite character (chronic nephritis, hydronephrosis, hematuria, etc.), an average point of 0.553 was ascertained.

The average point of 12 cryoscopies, done on 8 patients, with recovery following prostatectomy, was 0.561.

Of 15 fatal cases, 10 nonoperative deaths showed an average blood point of 0.62, while the average blood point of 7 cryoscopies, done on 5 operative cases, was 0.581. The average freezing point of the 31 cryoscopies, made on this class of cases, was 0.604; in 18 instances the point was above 0.58 and in 21 above 0.57.

Particularly important is the prognostic value of repeated cryoscopic examinations in functionally doubtful cases, which is best illustrated by two observations from our case records:

A man of 53 with the clinical diagnosis of prostatic cancer showed, on admission to the hospital, a blood point of 0.585, which, under bladder drainage, gradually went down[4] to 0.553. Suprapubic prostatectomy was followed by satisfactory recovery without recurrence within one year and two months.

In a man of 65 with the same clinical diagnosis the blood point increased from 0.574 to 0.580. Death occurred five days after prostatectomy with symptoms of renal insufficiency.

In 13 determinations of 9 cases of chronic nephritis during the stage of cardiorenal compensation, normal freezing points with an average point of 0.564 were obtained. Characteristic, too, for this class of cases is the prognostic value of the method, which is best evidenced by the recital of the following observation:

A nephritic of 60 entered the hospital with severe cardiac asthma, general anasarca, etc. His blood point of 0.573 fell under appropriate hospital regimen and with symptomatic improvement to 0.567; at the onset of uremic symptoms a point of 0.592 was ascertained, which rapidly rose to 0.620 prior to death in uremic coma.

All cases of nephritis, in which uremic symptoms were manifest, showed points gradually approaching 0.60 and above. The 5 patients in whom the blood point went above 0.60 died. In uremic coma followed by death very high points up to 0.70 were obtained. In two cases of deep uremic coma, tested shortly before death, the unusually high points of 0.790 and 0.826, respectively, were ascertained.

With our added experience we can simply reiterate the statement made three years ago that blood cryoscopy, if performed with faultless technic and interpreted by a critical observer, is a valuable test for estimation of total renal function.

BLOOD UREA

While quantitative determination of urea in blood was done systematically and with scientific accuracy by Strauss and others, methods used for that purpose were by far too complicated and technically difficult as to become available for clinical purposes. A few years ago Denis and Folin[5] introduced a simplified method; the test, though, assumed practical importance only through a new procedure as devised by E. K. Marshall, Jr.,[6] who utilizes the diastatic properties of urease, the enzyme of the soy bean, for the conversion of urea into ammonium carbonate, and finally into ammonia, which then is titrated against fiftieth normal hydrochloric acid.

In our determinations of blood urea we followed substantially Marshall's method. The technic of the test is comparatively simple, its greatest difficulty being the determination of the end-point of titration, in which accuracy is readily acquired with practice and experience. The normal content of blood urea, according to several authorities (Widal, Folin, Geraghty and others), varies between 100 and 500 mg. per liter, its upper limit being 500 mg.; values above that are considered to be indicative of urea retention, due to renal insufficiency.

We have made 43 blood urea determinations on 33 patients. In order to establish a standard of normal values we started our work by examining a number of normal patients, without any anatomic or functional renal involvement. Twelve such cases were tested and determinations were repeated in a number of these for purposes of control.

The values of all determinations for this class of cases ranged between 120 and 468, with an average of 236, thus demonstrating uniformly normal points.

In 5 cases of chronic nephritis without uremic symptoms, normal values, or an average point of 242, were obtained, while in 5 cases of uremic coma with death, abnormal points (542, 757, 936, 950 and 1,116), with an average of 860, were found.

In 6 cases of prostatic hypertrophy with residual urine, five of which were successfully prostatectomized, normal points with an average of 311 were ascertained. A prostatic with severe retention and marked urosepsis, who, on account of poor cryoscopic and phthalein values, was assigned to the interval operation, and who died shortly after preliminary suprapubic cystostomy, done under local anesthesia, showed, on two determinations, points of 486 and 301, respectively. A patient with prostatic cancer, who died from renal insufficiency, a few days after partial prostatectomy, demonstrated points of 168 and 420.

Five patients with unilateral or bilateral surgical kidney, one of whom died, showed normal values with an average of 231. In one of these cases, in which the necropsy revealed a bilateral pyelonephritis, values of 144 and 312 were obtained. In another patient with bilateral hematogenous kidney infection (colon), who entered the hospital with marked uremic symptoms (nausea, vomiting, drowsiness, etc.), and who rapidly improved under eliminative treatment, points of 396 and 226 were ascertained.

A patient with mercuric chlorid poisoning, with final recovery, showed a point of 214.

Our results with the blood-urea test practically coincide with those of other observers (Geraghty, Hinman) demonstrating values of about 500 mg. and below, in cases with normal renal function, and

4. For simplicity the lowering of freezing points below normal is designated as "rise" and vice versa.

5. Denis and Folin: Jour. Biol. Chem., 1912, xi.

6. Marshall, E. K., Jr.: Jour. Biol. Chem., 1913, xv.

higher points, up to 1,000 mg. and above, in cases of renal insufficiency.

CRITICAL COMPARISON OF BOTH TESTS

A comparative study of the clinical importance of blood urea and blood cryoscopy must necessarily be based on the consideration of the significance of the two tests. Blood urea estimates renal function by quantitative determination of retention in the blood of a single, though admittedly, the most important constituent of urine; in renal insufficiency the test indicates pathologic accumulation of end-products of nitrogen metabolism, and, therefore, does not so much register the degree, course and variability, as merely the final stage of disturbed function. Blood cryoscopy, on the other hand, does not depend on retention of a single urinary constituent, but on the total sum of retained molecules; or, in other words, it measures renal secretory activity in its totality. On account of the narrow margin of freezing points between normal and pathologic values, the rise or fall of renal functional capacity can be followed by repeated cryoscopy, and the test assumes, by this means, a prognostic significance which is of the utmost importance for surgical purposes, since on its findings indications for rational therapeutic measures may be based. Blood urea, on the other hand, because simply demonstrating abnormalities of renal metabolism, to which the organism has been subjected in the past, and on account of its very broad range for normal values, is a less delicate index of variations in renal activity, and, therefore, lacks in prognostic finesse.

Thus, in a patient with prostatic cancer, who died a few days after prostatectomy, freezing points gradually rising to 0.580 were found, while the corresponding blood urea points ranged between the normal figures of 165 and 420. In a comparative study of a fatal case, of similar type, in which gradual deterioration of renal function was ascertained by freezing points rising from 0.540 to 0.611, the corresponding blood urea points varied between 288 and 542, values which are considered to lie still within normal limits.

In contrast to these findings, five patients with chronic nephritis, with death in uremic coma, showed for both tests high or pathologic points, thus giving parallel results.

The greatest objection which has been made to blood cryoscopy is the limited range of normal freezing points, which lie within 0.02 of 1 degree C., and on account of which the slightest inaccuracy in technic may vitiate the result. While this objection does not obtain with blood urea, because of its very broad range up to 550 mg., the drawbacks of the test, as pointed out above, are not offset by the technical difficulty of cryoscopy. After a long practical experience with blood cryoscopy we must admit that its technic is exceedingly delicate, and that correct determination of the end-point is only feasible after long and continuous practice; since differences exceeding 0.005 of 1 degree C. may considerably change interpretation of end-results. During the course of the test a great many precautions must be continuously observed in the handling of the apparatus, thorough skill in which can only be acquired by constant application of an intelligent operator with laboratory training. Everything in the performance of the test, therefore, depends on attention to detail, which, if neglected in the slightest, may entirely upset the end-result. As soon, though, as these technical difficulties have been mastered, the results assume a surprisingly uniform aspect and the test becomes, in experienced hands, a finer and more exact index of renal function than any other method of determination of total renal function. In determination of blood urea, on the other hand, the technic is rather gross and is easily learned and mastered, so that the average intern, after some experience, may obtain reliable results. We can, nevertheless, only partly agree with Hinman's[7] statement, which designates blood urea as the simplest, most definite and most practical of tests of retention. It is certainly simpler, and therefore possibly more practical, but not more definite than cryoscopy, the technic of which is not so difficult as not to be within reach of every surgical assistant.

The tests supplement each other, and a parallelism in the results of both intensifies the significance of findings. We would, therefore, recommend, for doubtful cases, the performance of both tests as a routine measure.

CONCLUSIONS

1. Blood cryoscopy and blood urea run parallel in cases with normal renal function.
2. In renal insufficiency pathologic or high points are obtained with both tests.
3. The limited range between normal and pathologic points, while rendering technic of cryoscopy more difficult, increases its delicacy and prognostic significance.
4. Blood urea, while technically simpler, is, on account of the broad range of its normal and pathologic values, prognostically less precise.
5. Simultaneous application of both tests intensifies, in doubtful cases, the significance of findings.

999 Sutter Street — 1204 Sutter Street.

ABSTRACT OF DISCUSSION

Dr. Arthur B. Cecil, Los Angeles: I do not feel that a comparison can be drawn between the relative values of cryoscopy and blood-urea and methods of determining kidney efficiency by various dyestuffs. These methods are not opposed to each other. It is well understood that the kidneys have a great reserve power, and as long as that reserve power is not being exceeded, the patient will not clinically give signs of retention of products in the blood. A comparison might be made with a patient suffering with a valvular lesion of the heart. As long as he is at rest he seems perfectly well and does not show signs of broken compensation, but added strain exceeds the heart capacity for work. Now in the cases of the kidney, so long as they are not being overworked, cryoscopy and blood-urea will be normal, but if their efficiency is exceeded by a sudden strain there will be retention of the products in the blood. I think the only logical thing is, in the first place, to determine by cryoscopy or blood urea, as to whether the patient has exceeded his kidney efficiency, but in the absence of retention it does not mean that a patient is a good surgical risk, for he may not have the ability to take on extra work forced on him by operation. We must, therefore, determine how much the kidneys are worth from the reserve standpoint, and this is admirably determined by phenolsulphonephthalein. The kidney efficiency may be greatly reduced and the patient may appear quite well, but with the added strain of operation his kidneys are unable to take on their added work. In other words, he has broken compensation of the kidneys.

Dr. William E. Stevens, San Francisco: I think one of the most important lessons that the paper of Dr. Krotoszy-

7. Hinman: Surg., Gynec. and Obst., 1914, xix, 482.

ner and Dr. Hartman teaches us is the necessity of combining the tests of retention with those of excretion. There seems to be a tendency among many at present to be careless in this respect. They place their dependence on the phthalein test, which, as we all know, is most popular in this country at the present time, and they think that by this test we can learn everything there is to know about kidney function; whereas, it fails many times to teach us anything. I have recently seen several cases in which the total phthalein output was 15 to 20 per cent., in one case even as low as 10 per cent. in two hours, and many patients in cases of that kind are denied the benefit of a prostatectomy when it is badly needed. The foregoing patient was operated on and recovered without complications of any kind in the usual length of time. If tests of retention had been made in these cases, without any doubt we would have found them normal. I agree with Dr. Krotoszyner and Dr. Hartman that we should combine the tests in every case.

DR. EDGAR G. BALLENGER, Atlanta, Ga.: There are several factors apart from the technic of making these tests that are important for us to bear in mind. The quantity of water that a patient has been drinking before we make the test is one, and the amount of protein he has been consuming for the past few days is another. He may have dammed back much material that could have been disposed of by diuretics and purgation. We should consider whether or not he has been on a restricted diet, or whether he has had a fever that has burned up the material very rapidly.

DR. FRANK HINMAN, San Francisco: I think this contribution of Dr. Krotoszyner and Dr. Hartman is a most valuable one. It is the first detailed comparative study, so far as I know, of cryoscopy and blood-urea.

Dr. Krotoszyner took an exception to a statement that I have made that blood-urea was the simplest and most valuable test of retention. I think from his study I will have to modify that statement and not say it is the most valuable. I think, however, that there is a distinction between the two tests in this way: cryoscopy undoubtedly will give a more definite prognosis, but cryoscopy will not give the information that blood-urea will give in regard to the form of retention.

The forms of retention are of three kinds, namely, nitrogen retention, retention of acids and retention of chlorids. In the examination of the blood the estimation of retention of nitrogen is most important but, at the time of the blood-urea determination the acids can also be estimated. A cryoscopy examination alone will not tell which form of retention is present, whether it is a retention of nitrogen, a retention of chlorids, or of acids; and knowledge as to what form of retention is present is most important in the treatment of cases. Prognosis is better established by clinical studies than by functional studies anyway, although the two should be used in conjunction. I think, however, that Dr. Krotoszyner's conclusion is probably just that cryoscopy is a much better test than blood urea from a prognostic standpoint.

DR. GEORGE W. HARTMAN, San Francisco: Of course there is no one test that will anticipate what is going to happen in case of possible shock. It would seem after following this work closely that if there is any possibility of prognosticating ordinary cases, cryoscopy does that to the best advantage.

There have been cases suggested in the paper, and also mentioned by Dr. Stevens, in which the phthalein output was very low; others in which, on a standardized diet, urea was forbiddingly low. Had we relied on either of these tests alone we certainly should not have operated. In the presence of normal cryoscopies we proceeded and the patients did very well. The application of cryoscopy seems to be best in those old cases in which one might expect to have bad renal function—I mean old prostatics. In almost all of those patients the results have been unerring. In only one operative case in the last five years in which the cryoscopy was minus 0.58, or below, did the patient die. There is an unerring accuracy in cryoscopy. The normal values usually fall within certain limits, and we have made determinations on cases known to be normal time and again, the results always agreeing. It is surprising how one can do cryoscopies on the same patient at intervals of a week and find that the result will come within three one-thousandths of one degree.

In regard to the technic, if one does not get satisfactory results after one or two attempts one should not abandon it. It is a delicate test, because it deals with a thermometer that registers thousandths of a degree. In the course of time one acquires requisite ability. It requires nothing but practice.

I resent gently any suggestion that an attempt was being made to shove the diagnosis of these cases on to the laboratory. I am not a laboratory man primarily, by any means. I think our cases are studied as carefully clinically as they are ever studied from a laboratory standpoint. We make our diagnosis before we attempt this work. I think if you want to draw an age line, you might say that it is not necessary to do blood cryoscopy in patients under 50 years. When you get an individual past 50 it is extremely valuable, especially as regards prognosis. Some patients come in, especially old prostatics, who deserve to be operated on, and I am quite sure that if they were operated merely on a clinical diagnosis, they would not do well. We have put them to bed, put them in good shape, and then they have been operated on and recovered.

DR. W. F. BRAASCH, Rochester, Minn.: It is with some hesitation that I speak on this subject, because I have not had much experience with cryoscopy. I have had some experience with blood-urea in the estimation of renal function, and also with phthalein. Our experience on the whole has not been in keeping with the trend of recent literature concerning the value of functional tests. So far as an aid to prognosis is concerned, after all is said and done, clinical judgment and experience, based on surgically fundamental principles, is the best guide as to whether or not to operate. There is no laboratory functional test of the kidney which will tell whether or not to operate in the face of clinical symptoms. That we have been correct in our principles has been proved by the comparative operative results in a large series of cases. That does not mean that we pay no attention to the renal functional capacity. We do so, however, by clinical means. It is generally recognized that in the presence of residual urine prostatectomy should not be done without preliminary drainage of the bladder. Immediately following drainage the patient loses in weight and strength and there will be an abundance of clinical evidence to show that the patient is undergoing a period of renal insufficiency. The percentage of phthalein output will decrease and that of the retention tests will increase. This evidence, however, will seldom be present without the more apparent clinical evidence, and is unnecessary. When the patient overcomes the stage of functional depression, his weight and strength return, his appetite improves and it is usually quite apparent that his general condition will warrant operation. Whether or not the phthalein test remains low, or whether the urea test remains high, would not contraindicate an operation. While we should not disregard these various tests entirely, clinical experience has shown that they are only of secondary value in molding our clinical and surgical judgment.

DR. FRED R. CHARLTON, Indianapolis: I am moved by Dr. Braasch's remarks. Some years ago one of our best authorities on urinalysis laid great stress on epithelium coming from the ascending loop of Henle or the descending loop of Henle and endless discussion grew out of such studies. As a matter of present day fact it did not make one bit of difference which loop of Henle the debris came from. It was in a way a scientific study, but it had no value prognostically and little otherwise even if the claims of differentiation had been true, which they probably were not. About that time Dr. Richard Cabot, of Boston, came out with the statement that he would rather depend on the total amount of urine passed in twenty-four hours, plus its gross appearance, and its chemical reaction, than on all the fine spun urinalyses that were being made. That publication

came to many as quite a shock, but none the less I know that it did me a great deal of good, and I believe that it brought us back to a normal appreciation of what our business has to do with. I could not go into a physical laboratory and carry on the many studies that are now being carried on with great credit, and it is not my idea to take away one word of credit from the men who are doing this sort of work. However, it is a very easy thing to hold a nickel in front of your eye and blot out the sun. You are so wrought up with your enthusiasm that you forget everything else. I took up the kidney functional test somewhat tardily, after others had already published their series of cases. Since then it has seemed to me that in so far as the phthalein test was concerned, it prognostically made very little difference, and those with low phthalein that I operated on, because they seemed otherwise suitable cases and because they needed it, went on and recovered regardless of the phthalein findings. I have had two cases with a high phthalein output, one with forty-five and one with fifty, and they both died from an unassignable cause, other than renal insufficiency. While I believe that these pure laboratory studies are of tremendous value and that the men who are doing them should receive our heartiest appreciation, I do not believe I would hesitate because of a low phthalein output to operate where my clinical judgment said it was necessary. We have no right to disregard all our earlier clinical values whenever the latest laboratory claim is set up.

Dr. Louis E. Schmidt, Chicago: I would like to say that I agree with every word said by the two previous speakers, particularly Dr. Braasch, who went into details scarcely necessary for me to repeat; but there is no question that all of these methods of examination are completely secondary. I do not believe there is any general or genito-urinary surgeon who will refuse to operate on a patient if any one of these methods of examination should not bear out one or another theory.

In regard to cryoscopy, it is simply a routine method of examination. It is certainly fascinating, equally so as the phthalein test. I hardly think a day passes that I do not do more than one. The reason I mention that is this: It is not a method involving any great amount of work. I think it is a method that can be carried out just as quickly and as easily as any other. If anyone is interested in keeping up with work of this kind I think it is well worth while to make as many of these tests as possible, because in the future certain conclusions may be derived from these various findings.

Dr. A. J. Crowell, Charlotte, N. C.: The discussion brings out a fact that I tried to emphasize in my paper, that every available means at our command should be used in arriving at a diagnosis and ascertaining the best surgical procedure to pursue, and when to operate, but we must not depend on any one of them. I, like Dr. Braasch, think we should throw great stress on the clinical symptoms, yet I do not believe that any one of the means or aids at our command should be excluded in arriving, not only at our diagnosis, but in assisting us in deciding when to operate and what to do.

Dr. Granville MacGowan, Los Angeles: The condition of men who require prostatectomy, and the condition of the many people who have obstructive lesions in the anterior or posterior urethra, are very lamentable. It requires often a great deal of judgment to care for and preserve their lives. They will all die if you do not operate on them and many of them will die if you do, or do too much at one time. Much of your judgment must depend necessarily on the results of investigations which you make of the ability of the kidneys to keep the man alive. All people with chronic obstruction of the posterior urethra are already poisoned. They are to a certain extent immune to their infective organisms, but they are not immune to an extra accumulation of urea in the blood.

A surgeon who sees further than the local conditions will learn much of value in the formation of his judgment. If one simply tests the kidneys to find out how large a percentage of phthalein or of indigocarmin will pass through in a certain time, and bases operative interference on that alone, he will be chagrined to lose some patients in whom the output of phthalein is high, and, on the contrary, he will be astonished sometimes where there is a low output of phthalein to see an undisturbed convalescence. If the patient is drained preliminarily and the color tests applied, then the blood-urea tests, and if the surgeon possesses the technical skill, cryoscopy, material is gathered which when added to one's clinical knowledge and experience of general diseases, enables one to determine exactly what the clinical status of the individual is. Thus and thus only the operator will do the best for himself and also do the best for his patient, for he has neglected nothing bearing on the case, thereby becoming a successful operator, and the patient will recover from the troubles for which he seeks operation.

Probably the wisest genito-urinary specialist who ever lived was Albaran. In perfecting his judgment as to operative interference he depended almost entirely on the ability of the kidneys to secrete water under force, and on the output of urea in the urine under such forced output. This is something that you must not overlook. Practically we depend on the water output, on the estimation of urea in the urine, on the ability of the kidneys to put out phthalein and on the clinical appearance of the patient. I regard them all as necessary, and I look with favor on the usefulness of cryoscopy.

Dr. Martin Krotoszyner, San Francisco: I beg to take exception to Dr. Hinman's statement, that he considers blood-urea estimation preferable to cryoscopy as a guide to rational treatment. From my experience with blood-urea, although it is not as extensive as that with cryoscopy, I am, on the contrary, fairly well convinced of its superiority for therapeutic purposes. I agree with Dr. Stevens that too much stress is laid, especially in this country, on the exclusive use of phthalein, and also with Dr. Braasch, who warns against overestimating the evidence furnished by any or all laboratory tests. It is, for instance, a fact that by the exclusive use of the phthalein test, as it is at present done dogmatically in every clinical case of surgical kidney, some cases may be robbed of the benefit of a life-saving operation. The value of functional tests is not exhibited in clinically clear cases, which as a rule, can be sent to the operating room after a brief and more perfunctory functional study. However, the great value of determining kidney function becomes apparent in the clinically doubtful cases and particularly in those in which the prognosis is dubious. For these purposes we have found cryoscopy to be a valuable guide as indicating the reserve capacity of the kidneys. There, in reality, lies the most important aid that we can expect from any functional test, and since cryoscopy has apparently given the best results in this respect, we have, in spite of its technical difficulties, tenaciously clung to it and shall continue to do so in the future, unless we become convinced that equally good results are obtainable by another procedure.

Cancer Statistics.—On the Continent of America we also see a corresponding increase in the death rate from cancer. In New York the death rate from malignant disease in 1913 was 82 per hundred thousand of the total population, whereas for the previous five years the average was 79; in Boston it was 118, as compared with an average for the previous five years of 110; in Pittsburgh, 79 per hundred thousand, as compared with 70 for the previous five years; in Baltimore, 105 as compared with 94 for the previous five years; in Chicago, 86, as compared with 81 for the previous five years; in Philadelphia, 95, as compared with 88 for the previous five years; and in St. Louis, 95 per hundred thousand, as compared with an average of 85 for the previous five years. The mortality statistics for the whole of the United States give in 1900 a death rate from cancer of 63 per hundred thousand of the total population; in 1904, of 70.2; in 1909, of 73.8, and in 1912, of 77 per hundred thousand.—W. H. B. Aikens, *Practitioner.*

TRAUMATIC SEPARATION OF THE NERVE ROOTS FROM THE SPINAL CORD

REPORT OF A CASE

WILLIAMS B. CADWALADER, M.D.
Instructor of Neurology and Neuropathology, University of Pennsylvania, School of Medicine; Clinical Assistant, Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases
PHILADELPHIA

The tearing away of the nerve roots from the spinal cord is, fortunately, a somewhat uncommon accident. When it does occur, however, the diagnosis should be made without much difficulty. In spite of the ease with which the diagnosis is made, the condition is often overlooked. In only a few instances has the diagnosis been verified at operation or at necropsy. Mills[1] reported a case in which operation had been done, and later Frazier and Skillern[2] also published a report of the same case. Of the twenty-three cases found by Frazier and Skillern in the literature on the subject, only one afforded an opportunity to determine at necropsy the extent of the damage done to the nerve trunks.

F. F., man, aged 36, was admitted to the Orthopedic Hospital and Infirmary for Nervous Diseases, May 28, 1912. He gave the following history: In 1907 he had fallen between some machinery, and his left shoulder and left arm had been severely wrenched. Any further details could not be elicited. Immediately after his accident the whole left upper extremity became paralyzed, and severe neuralgia set in and has continued ever since.

When examined, his left arm was found to be powerless and hung at his side. All the muscles of the left hand and forearm were totally paralyzed, as were also the serratus magnus, biceps, triceps and brachialis anticus. The deltoid and latissimus dorsi muscles retained considerable power, although they were weaker than the muscles of the opposite side. The rhomboids and the upper part of the trapezius contracted well. Movements of the left pectoral muscle were abolished.

The reaction of degeneration was found to be present in all the muscles of the hand and forearms, and the biceps, pectoralis major and triceps. The supraspinatus and infraspinatus and the latissimus dorsi and deltoid did respond to the faradic current, but not so readily as on the sound side. The rhomboids reacted normally.

The result of the ocular examination made by Dr. Langdon was as follows: The left palpebral fissure was narrower than the right, and the left eyeball seemed to be slightly contracted. The left fissure measured 9 mm., the right, 8 mm. The pupils were unequal in size, the right one measuring 3 mm., and the left one being slightly smaller. Both pupils reacted promptly to light, and accommodation was normal. Two drops of a 4 per cent. solution of cocain caused the left pupil to dilate 6 mm., but the same amount instilled into the right eye caused the pupil to dilate only 4 mm. Two drops of a solution of homatropin hydrobromid, 8 grains to the ounce, dilated the pupils equally, each measuring 6 mm. Measurements taken with the exophthalmometer showed that the left eyeball protruded 16 mm. and the right 17 mm. The optic disks were normal. Vision: O. D., 5/10; O. S., 5/6. The extra-ocular muscles were entirely normal.

Cutaneous sensation was completely abolished below the point corresponding to the insertion of the tendon of the deltoid on the outer side of the arm. Sensations of deep pressure were lost. The ability to recognize movements of the fingers, wrist, and elbowjoint was totally destroyed. The hand was swollen and cold and a purplish-red.

The patient complained bitterly of deep-seated boring and gnawing pain, which seemed to be localized to the palm of the hand and wrist. There was no tenderness, and movement or manipulation of the arm did not influence the pain. The patient described the pain as being constant and deep-seated, sometimes extending up to the elbow, and varying slightly in intensity from time to time.

An operation was decided on for the purpose of exploring the region of the brachial plexus.

June 10, 1912, Dr. William J. Taylor exposed the main trunks of the brachial plexus in the neck, just above the clavicle. On being exposed, the middle and lower trunks appeared to be involved in fibrous tissue. A small portion of the inferior trunk was resected, the adhesions were broken up, and the ends were reunited by suture.

After the patient had recovered from the operation, he was examined for further changes of sensation and motion. The same results were secured as before the operation: resection of the nerve trunk did not produce any additional anesthesia or motor paralysis, but the neuralgia did abate considerably—in fact it almost disappeared for two weeks, after which it gradually returned, and was just as severe as before operation.

After the resected portion of the nerve had been stained with hemalum and fuchsin, and by the Van Gieson and Wiegert methods, it was examined microscopically. The entire cross-section of the nerve trunk was found to be degenerated; not a single normal axis cylinder could be recognized, and there was marked proliferation of the endoneural connective tissue.

The neuralgia did not improve, and the patient continued to complain so much of the uselessness of his left arm that in August, 1912, it was amputated 4 inches above the elbow. The stump healed by first intention.

The nerves of the amputated forearm were dissected out and examined microscopically. The ulna, radial, median and muscle-spiral nerves did not appear to contain a single normal axis cylinder, and there was pronounced overgrowth of fibrous tissue. Degeneration was complete. The degenerative process in these nerves was exactly similar to that found in the resected portion of the inferior trunk. No difference was found in sections taken from any part of these nerves, the peripheral and the proximal portions presenting the same appearance.

The patient was again examined for sensation, and it was found that the upper limits were the same as before operation. The neuralgia seemed to subside somewhat for a few days, only to recur with equal intensity. After the amputation the patient insisted that he still felt the presence of the left hand and fingers, and that the pain seemed in the palm of that hand just as it was before operation. It felt, he said, as if the left thumb was tightly flexed and was boring into the palm of the hand. When asked to place his right index finger on the spot where the pain was felt, he indicated the inner side of the stump of the left arm. The pain was well localized and always located at the same point on the stump. Before amputation there was no contracture of the thumb and fingers of the hand, and they could be freely moved by the examiner, but not by the patient.

The profound motor paralysis and the complete anesthesia, together with the sympathetic paralysis of the eye on the afflicted side, would seem to indicate that the lesion must have been situated proximal to that point at which the posterior thoracic nerve is derived from the fifth, sixth and seventh anterior cervical roots, for the serratus magnus muscle was paralyzed; furthermore, the lesion must have been proximal to the point at which the sympathetic fibers arise from the eighth cervical and first thoracic roots. The deltoid was affected, but a portion of its function was still preserved; all the remaining muscles of the upper extremity, however, were paralyzed. The area of anesthesia conformed to the distribution of the

1. Mills: Pennsylvania Med. Jour., August, 1911.
2. Frazier, C. H., and Skillern, P. G.: Supraclavicular Subcutaneous Lesions of the Brachial Plexus Not Associated with Skeletal Injuries, THE JOURNAL A. M. A., Dec. 16, 1911, p. 1957.

fifth, sixth, seventh and eighth cervical and the first dorsal roots.

It seems evident, therefore, that at the time of the accident the anterior and posterior roots, from which the brachial plexus is derived, had been torn away from the spinal cord. As the deltoid and the rhomboids were not totally paralyzed and the cutaneous sensation was only partially destroyed in the area supplied by the fifth cervical posterior root, it is probable that neither the anterior fifth cervical root nor the posterior fifth cervical root was completely ruptured. Conductivity through these roots, though imperfect, may still have been retained.

This case furnishes additional proof of the accuracy of the present-day teaching that when an anterior spinal nerve root is cut, all the fibers below the point of section die. The distal portion of the root degenerates completely. When the posterior root is cut, all the fibers proximal to its ganglion and between the point of section and the spinal cord die, whereas all the fibers between the divided portion and the ganglion still live. Nevertheless, having been separated from the cord itself, sensations can no longer be conveyed to the brain. It is obvious, therefore, that so long as pain persists, this communication cannot be entirely destroyed; in this case probably portions of one or two posterior roots were not entirely ruptured.

In cases such as that just described, the treatment must be directed merely toward relieving pain. This can be accomplished only by complete section of the intraspinal sensory roots already injured, but still capable of conducting painful sensations. Alcoholic injections into the peripheral nerve trunks would have had no effect, since degeneration had already taken place.

1710 Locust Street.

A PLEA FOR CHOLECYSTECTOMY

JOHN W. LANE, M.D.
Fellow of the American College of Surgeons; Surgeon-in-Chief, St. Elizabeth's Hospital
BOSTON

Ochsner,[1] in his "New Manual of Surgery," states: "Cholecystotomy is the operation of choice for removal of stones from the gallbladder." Experiences in the past year convince me that cholecystectomy is the operation of election for cholelithiasis. In 1887 the first excision of the gallbladder was performed by Langenbuch for carcinoma. Since that time the operation has been performed by ever increasing numbers of surgeons. The presentation of a plea for its even more frequent performance is the object of this paper.

In approaching the subject a brief review of the facts known about the gallbladder is of value. The gallbladder, with the liver and pancreas, develops from that part of the fore intestine which later becomes the duodenum. The bile duct and the pancreatic duct drain conjointly into the duodenum at the ampulla of Vater; hence the gallbladder, pancreas and duodenum are anatomically closely related. The bile and pancreatic juice are great factors in the complicated process of digestion, and stimulation of the splanchnic nerves will inhibit the flow of each. Each of these organs, having a common origin, is possessed of the same nerve supply.

The function of the gallbladder is, as yet, not completely known. The physiologists maintain that its main object is the storing of the bile until needed for digestion. J. B. Murphy thinks its action is similar to that of the secondary bulb in a bellows, that is, to maintain a steady, even pressure. This theory is ingenious. At operation, however, the gallbladder is not always found in a state of tension; not infrequently it is seen almost collapsed. The maintenance of secondary bulb action is not absolutely necessary to the individual, as patients from whom the gallbladder has been removed can testify.

The mucous membrane of the gallbladder secretes a clear fluid, which is undoubtedly of some use to the human organism, but this fluid is not a vital necessity to an individual. Mayo[2] has suggested that the organ, like the appendix, is an "obsolescent" stage of human embryology. This sounds reasonable.

The pathology of gallbladder disease has been clearly set forth by MacCarty[3] and reference to his article is desirable. Given a pathologic gallbladder, what should be the choice of operative procedure? Convincing arguments lead to the adoption of cholecystectomy as the ideal procedure, and the relegation of cholecystostomy to a position as an operation of necessity — just as drainage of an appendix abscess without appendectomy is necessary at times, but not ideal. There are certain conditions associated with pathologic gallbladder in which cholecystectomy is contraindicated. In acute and chronic pancreatitis of an advanced type biliary drainage is of distinct advantage, and cholecystectomy out of the question.

In cases in which there is an insurmountable obstruction of the common duct it is self-evident that cholecystectomy would be a fatal procedure. The objectors to cholecystectomy do not, in my opinion, present a very strong case. They state that the gallbladder is a necessary part of the body and therefore should not be removed. Moynihan[4] answers this argument succinctly: "The gallbladder is devoid of any strikingly useful purpose."

A very important statement by the advocates of cholecystotomy is that cholecystectomy is more dangerous. Crile[5] says:

> . . . in cases of acute cholecystitis, with protective adhesions, in which the cystic duct is obstructed, cholecystectomy will give a higher mortality than will mere drainage of the gallbladder, for the reason that during the excision of the viscus, even with the most careful technic, it is necessary to traumatise the surrounding tissue to such an extent that the local immunity of the tissues is impaired. . . . In such cases it is probably wiser to merely drain the gallbladder, interfering with the local tissues as little as possible. Later, if necessary, the gallbladder may be excised.

It has been my experience that even in such cases cholecystectomy is safer. I have never yet been able to find a trochar which did not leak around its puncture site, and have always felt that the danger of peritonitis from cholecystotomy was greater than from cholecystectomy. It is not possible to do a cholecystotomy without soiling the field to a greater or less extent. Moynihan states, following the previously given quotation from him: ". . . and its (the gall-

1. Ochsner: New Manual of Surgery, Ed. 4, Chicago, Cleveland Press, 1915, p. 517.

2. Mayo, W. J., and Mayo, C. H.: Keen's Surgery, iii, 991.
3. MacCarty: Collected Papers, St. Mary's Hospital, 1910, p. 181.
4. Moynihan: Abdominal Operations, Ed. 3, Philadelphia, W. B. Saunders Company, 1914, ii, 289.
5. Crile: Surg., Gynec. and Obst., 1914, xviii, 430.

bladder) removal does not add appreciably to the danger of the operation."

In defense of cholecystostomy the statement is made that true reformation of gallstones is rare.[6] I believe this to be true. Recurrence of symptoms is, however, not rare. Finney[7] writes:

> When we add to the mortality of secondary operations performed after cholecystostomy, the number of which is undoubtedly greater than after cholecystectomy, there is probably little to choose from in respect of the mortality rate between the two. There is always an appreciable percentage of recurrences of gallstones after cholecystostomy, probably less than 1 per cent. But many overlook, of course, doing an operation in which the gallbladder is not responsible for symptoms.

It is urged against cholecystectomy that conditions may arise in the upper quadrant when the need of drainage is urgent, but impossible, on account of the earlier removal of the gallbladder. This is so rare that it can be disregarded. It would probably be more apt to occur if the gallbladder were left behind, as this organ, in my opinion, is the cause of many of the troubles in the epigastric region.

Cholecystectomy has many advantages over cholecystostomy. Primarily, cholecystectomy, in cases of cholecystitis, with or without gallstones, removes from the body the natural habitat of gallstones, the place where the majority of said stones foregather; hence, it takes away the main chance of recurrence and gives the most likelihood of permanent cure.

The most striking advantage of cholecystectomy and the obvious one to the operator is the immediate convalescence. The patient on whom a cholecystostomy has been performed goes back to bed with rubber tubing ¼ inch to 1 inch in diameter and 2 or 3 feet long emerging from his belly. This is attached to a drainage bottle and pinned, to prevent its pulling out of the gallbladder, to the sheeting. For from seven to fourteen days, and perhaps longer, in some cases, this tubing remains, constantly tugging and pulling on the tender wound, causing untold agonies. After removal of the drainage tube the abdominal wall is bathed in biliary discharge, dirty and sticky, if not irritating — on the whole a rather miserable existence for a person of fine sensibility.

Contrast that picture with that of the immediate convalescence in cholecystectomy.

The abdominal wound can be closed without drainage or at most a small cigaret drain for forty-eight hours. This makes the convalescence immeasurably more comfortable and also shortens it greatly.

Some months ago I made a cholecystostomy for cholelithiasis. Ten days later, two cholecystectomies were performed for similar conditions, and both these patients left the hospital over two weeks before the cholecystostomy patient.

A young woman on whom a simultaneous appendectomy and cholecystectomy were done was out of bed on the fifth day and left the hospital on the seventh day, feeling very well, with the wound entirely healed. It is impossible to get any such result from a cholecystostomy. Hence, cholecystectomy has an economic advantage in lessening the stay of the patient in the hospital.

The higher mortality for cholecystectomy quoted by the majority of writers is due not to the operation per se but to the delay in reaching operative interference.

Deaths from appendicitis are due to delay, not to the operation performed, be it excision or drainage. This is the case with cholecystitis.

The public should be educated concerning diseases of the gallbladder, as it has about appendicitis, and there is no doubt that it will respond as quickly.

The series of cholecystectomies on which I base this paper number seventy-seven. In these there have been but two deaths. One death occurred in a case in which the gallbladder had spontaneously anastomosed with the duodenum, and, after closing the opening in the doudenum and removing the gallbladder, I found carcinoma obstructing the common duct. This death was due to bad judgment, not to the cholecystectomy per se.

The second death occurred in a case of cholelithiasis, in which the patient went to the operating table without the proper previous medical examination. No operation of any kind would have been performed if the status of kidney and heart had been known previous to operation. Cooperation between medical and surgical science in hospitals is absolutely necessary to good operative results.

In two of the cases, in addition to the cholecystectomy, both an appendectomy and a gastro-enterostomy were done at the same time.

6. Stanton, E. MacD.: Ann. Surg., February, 1915.
7. Finney: Canada Lancet, 1913-1914, xlvii, 892.

VIABILITY OF BACILLUS TYPHOSUS IN ICE CREAM *

O. W. H. MITCHELL, M.D.
SYRACUSE, N. Y.

The use of various frozen foods and confections in which milk and milk products serve as a basis or constituent has become so great as to demand serious attention from sanitarians. The persistence of the typhoid bacillus in milk and milk products is well known, and many cases and epidemics are recorded which have been transmitted by this food. It is also known that *Bacillus typhosus* is not a normal inhabitant of milk. In only one instance,[1] and this is not accepted by some bacteriologists, has *Bacillus typhosus* been demonstrated in the flesh and organs of the cow. Through polluted water, from the hands or person of convalescents or carriers, or in some similar way the bacillus gains entrance into milk. In other words, *Bacillus typhosus* in milk and milk products comes from human sources. It is for these reasons that the milk products which are handled the most are the most liable to contain the micro-organism.

Ice cream is a complex mixture, the number of ingredients being variable. Because of the liability of contamination, great care should be used in its preparation. That great care is not always exercised was shown by Wiley[2] in 1906-1907, who found that in the city of Washington of a number of places manufacturing ice cream three were clean, nineteen were dirty, sixteen were fair and nine filthy. Wherever investigations have been made in places where regulations or their enforcement were lax, conditions have not been found highly satisfactory.

* From the Department of Preventive Medicine and Hygiene, Harvard Medical School.

1. Levy and Jacobstahl: Arch. f. Hyg., 1902, xliv. Hirschbruch and Marggraf: Arb. a. d. k. Gsndhtsamte., 1913, xlii, 623.
2. Wiley: Washington Med. Ann., 1908-1909, vii, 61.

The bacterial count of ice cream is usually high, but is much lower with cleanly prepared products. The presence of such a large number of bacteria complicates experimental study. Bahlman[3] found that other substances besides milk, particularly gelatin, frequently contain a large number of bacteria, but because of the amounts used, that milk and cream are the main sources of bacteria.

The impossibility of excluding other probable sources of infection makes epidemiologic studies of supposed ice cream epidemics unsatisfactory. There are five instances in the literature in which ice cream is mentioned as acting, or possibly acting, as a conveyor of typhoid fever. Turner,[4] in 1892, reported an epidemic of typhoid fever which to his mind was transmitted through ice cream. This outbreak occurred in the Sanitary Districts of Greenwich and Rotherhithe, England. An extensive investigation was made by Turner and other health officers with the result that they believed nothing but ice cream sold by Italian venders was responsible for the epidemic. Several of the Italians had typhoid fever in their families; one dealer had two cases which occurred just before the epidemic.

Munro[5] studied an epidemic of 800 cases of typhoid fever which occurred in Mid-Renfrewshire, England, in 1893. The water supply was found polluted, but it was thought that eighty-six of the cases were traceable to ice cream.

Hope,[6] in 1898, investigated an epidemic of nineteen cases of typhoid fever which occurred in the suburban district of Knotty Ash, near Liverpool, England. With the exception of temporary closets, which were used while the drainage system of the school was being repaired, and a foul brook nearby, no possible source of infection was noted until the evidence pointing to ice cream sold by an Italian vender at a fair was obtained. All the sick were schoolchildren, and all of them had been to the fair. Hope states that the water and milk supplies could be excluded.

Behla[7] reported an epidemic caused by whipped cream and ice cream.

Rosenau[8] makes the following mention of ice cream: "Freezing kills only a certain percentage of typhoid bacilli. In Washington several cases of the disease were traced to ice cream."

The epidemiologic studies are not numerous or extensive enough to be very valuable. Some of them are highly suggestive, but the evidence cannot be considered as certain proof of ice cream transmission.

EXPERIMENTAL DATA

In order to study the viability of *Bacillus typhosus* in ice cream, six mixtures were frozen. *Bacillus typhosus* was then incorporated in the preparations. Samples of 100 c.c. were removed from each and placed in covered glass containers, and these were packed in a salt and ice mixture. The temperature throughout the experiments varied from 3 to 4 below zero Centigrade.

EXPERIMENT 1.—Ice cream was made according to a formula in Fannie M. Farmer's cook book. One-half teaspoonful of flour, a few grains of salt and one-half cup of sugar were mixed, and to this were added half an egg, slightly beaten, and 1 cup of scalded milk. The mixture was then cooked in a double boiler for twenty minutes. When cool, 1 pint of thin cream and 1 tablespoonful of vanilla were added. The mixture was then frozen. The number of typhoid bacilli added was 70,000 to each cubic centimeter of ice cream. Samples were removed twenty-four hours after inoculation and plated on Endo's medium and plain agar. Many typical typhoid colonies were present on the Endo plate. Subsequent culture and agglutination proved the bacteria to be typhoid bacilli. The total bacterial count was 450,000 per cubic centimeter. After four or five days the ice cream became separated into a watery and a cream layer. This separation occurred after each examination when the preparation was well stirred and the different layers thoroughly mixed. *B. typhosus* was recovered for the last time on the twelfth day after inoculation. No attempt was made to study the percentage of *B. typhosus*, but it was easily noted that a gradual decrease took place. At the time of the last isolation, the total bacterial count was 900,000.

EXPERIMENT 2.—Ice cream made with 1 pint of thin cream, one-half cup of sugar and 1 tablespoonful of vanilla was treated similarly to the ice cream in Experiment 1. To each cubic centimeter of the ice cream 70,000 typhoid bacilli were added. The total bacterial count, twenty-four hours after inoculation, was 300,000, and many typical typhoid colonies appeared on Endo plates. Subcultures and agglutination were positive. The last isolation, thirty-nine days after inoculation, showed very few colonies of any kind and the total bacterial count was only 16,000. The ice cream showed the same separation as that of Experiment 1.

EXPERIMENT 3.—To an ice cream made like that of Experiment 1, except that to the quart 1 level tablespoonful of Knox gelatin was added, 40,000 typhoid bacilli per cubic centimeter of ice cream were introduced. The ice cream was kept like that of previous experiments. After twenty-four hours the total count was 660,000, and Endo plates yielded many colonies which proved to be typhoid bacilli. The ice cream remained quite hard for about ten days and then softened, became separated into layers, was semifluid and stringy. *B. typhosus* was isolated for the last time twenty-five days after inoculation, and the total bacterial count on that day was 5,600,000.

EXPERIMENT 4.—Ice cream was made like that of Experiment 2, except that to the quart 1 level tablespoonful of Knox gelatin was added. To each cubic centimeter of the ice cream, 40,000 typhoid bacilli were introduced. Packing and storage was the same as in other experiments. After twenty-four hours, the total count was 1,200,000, and a large number of typhoid colonies, as shown by subsequent tests, were present on Endo plates. The consistency of the ice cream remained about the same as that in Experiment 3. The number of typhoid bacilli gradually decreased, and the last positive examination was made twenty-one days after inoculation. The total count at that time was 500,000.

EXPERIMENT 5.—Ice cream was made the same as in Experiment 1, except that pasteurized milk and cream were used and nine grams of "Flake" were added to the quart. Flake is a powder prepared by the Murray Company, 224 State Street, Boston. According to a circular accompanying the powder, the preparation "is a pure, wholesome powder, which can always be relied on, and is essential in making an exquisitely smooth ice cream." To each cubic centimeter of the ice cream, 320,000 typhoid bacilli were added. It was then packed and stored. After twenty-four hours the total count was 1,440,000, and typhoid colonies were numerous on Endo plates. After a few days the ice cream became quite soft, and separated into a watery and a cream layer. Examinations made every few days gave positive results until thirty days after inoculation, when the experiment was discontinued. The total count at the time of the last examination was 990,000.

EXPERIMENT 6.—To a preparation like that of Experiment 1, except that pasteurized cream and 9 gm. of Flake to the

3. Bahlman: Am. Jour. Pub. Health, 1914, iv, 1009.
4. Turner: Practitioner, London, 1892, xlix, 141.
5. Munro: Public Health, London, 1894-1895, vii, 30.
6. Hope: Liverpool Med.-Chir. Jour., 1898, xviii, 185.
7. Behla: Klin. Jahrb., x, 256.
8. Rosenau: Preventive Medicine and Hygiene, New York, D. Appleton & Co., 1913, p. 90.

quart were used, *B. typhosus* to the extent of 320,000 per cubic centimeter of ice cream was added. After storage for twenty-four hours, the total count was 1,600,000, and typhoid colonies were numerous on Endo plates. The last positive result was obtained twenty-seven days after inoculation, when only one subcultural colony from the Endo plate proved to be *B. typhosus*. On the date of the last finding, the bacterial count was 1,060,000. After a few days' storage this ice cream showed the same changes as that of Experiment 5.

All of the preparations had about the same odor at the beginning. They were pleasant smelling, owing largely to the presence of vanilla. After a few days they began to lose their sweetness of odor, and at the time of the last examinations they gave off mildly unpleasant odors.

CONCLUSIONS

1. *Bacillus typhosus* survives in ice cream for varying lengths of time, in the recorded experiments from twelve to thirty-nine days. It is plain, therefore, that ice cream may easily transmit typhoid fever.

2. The findings emphasize the necessity of strict cleanliness in the manufacture of ice cream, and the importance of pasteurization of milk and milk products used in these mixtures.

1011 Madison Street.

TYPHOID FEVER RESULTING FROM INFECTION OF AN UNPASTEURIZED MILK SUPPLY

REPORT OF A SERIES OF FIVE CASES

DON B. LOWE, M.D.
District Physician, Cleveland Division of Health
CLEVELAND

This series of five cases of typhoid fever is reported merely to emphasize (1) the dangers of an unpasteurized milk supply, and (2) the necessity of reporting contagious diseases to the proper authorities. The details of the onset, the incidence of age, sex, etc., are in the records of the division, but are unnecessary in this brief report.

Late in January and early in February, 1915, five cases of typhoid were reported to this division, each one of the patients having received his milk supply from the same dealer. This, with the explosive character of the outbreak, made us suspect that infected milk was the cause. With this in mind, the following plan of investigation was outlined: first, investigation of the milk depot; second, of the dairy from which the milk came, which was located 90 miles from Cleveland; third, of the cases and their relation to other people to exclude contact; fourth, of the train-men; fifth, of the handlers at the depots at the shipping and receiving points.

This procedure, including detailed data concerning the families of those inspected, yielded negative results until the handler who took the cans from the train in Cleveland was seen. He stated that his wife had been ill about eight weeks with "what the doctor said was typhoid fever," but the doctor failed to report to the health department. He said also that he had been given permission by the dealer to open the cans and take such milk as he required from them, and that this had been done both before and after and during his wife's illness. Two weeks previous to the onset of her illness he had been off duty himself for five days with what he thought was the grip, but no doctor's diagnosis is obtainable. The Widal on his blood gave a suspicious test, and on that of his wife a positive test in dilution as high as 1:100. Stool examinations in both cases were negative, but were first taken several weeks after the onset of the disease. We feel justified, however, in believing that these five patients, of whom one died, were infected by milk contaminated by this man. Investigation showed that he had dipped the milk from the cans with a cup from his own dinner pail which was carried back and forth with him from his home. The difficult point in the differentiation is whether the infection came from the man himself during an attack of typhoid which he thought was grip or from the infection of the wife, whose care was largely in the husband's hands.

Had the milk been pasteurized on its arrival in Cleveland, this trouble would not have occurred. Had the case of typhoid been reported by the physician in charge, the routine investigation would have given us at once information which would have prevented the carrier from coming into contact with the milk at any time. Another point of value is that if the cans had been sealed, this series of cases could not have occurred.

DESTROYING LIMITED OBSTRUCTIVE GLANDULAR GROWTHS IN THE POSTERIOR URETHRA BY THE HIGH FREQUENCY CURRENT*

ROBERT V. DAY, M.D.
LOS ANGELES

We are agreed, I take it, that for the most part cautery work in the posterior urethra, or at the bladder neck, by the various methods now in common use through an electrically lighted instrument, is tedious and capable of destroying but a small amount of tissue at a sitting. The ordinary electric cautery point, while marvelously efficacious in relieving the early irritability and early irritation of incipient prostatism and also of ridding the patient of quite small projections and growths—even this requires many treatments at not too short intervals. If the obstructing part or growth is considerable, it is often impossible to treat it effectively in this manner. An ordinary urethral electric cautery point small enough to be accurately placed in plain view of the operator through an average sized urethra is so small, develops so little heat comparatively and in contact with living tissue is so quickly cooled that only the very small or succulent masses may be made to slough.

High frequency current methods have attained great vogue, and justly. But the methods of application are capable of great extension as, one at a time, difficulties are overcome. The Oudin or monopolar current has been efficacious in bladder papillomas especially, where there is plenty of room to manipulate the electrode and obtain a long spark gap. In the urethra it is more difficult by reason of close quarters, gases collecting and obscuring the view; also work in small space requires shortening of the spark gap to avoid

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unpleasant ground shock. This is much easier to prevent with the bipolar current—the large neutral electrode being placed under the buttocks or over the pubes. The devitalizing of tissue is much more rapid and extensive and secondary hemorrhage is less likely to occur. We have had one case of very distressing and with difficulty controlled secondary hemorrhage after so-called fulguration with the Oudin current of a posterior urethral polyp; we have had none follow the bipolar method, though the latter has been more frequently used.

Whether or not we use the Oudin or bipolar current, the work has been done through various types of instruments as follows: once, through an open tube with the McCarthy fulguration electrode handle; but usually through a Buerger convex sheath operating cystoscope; a McCarthy cysto-urethroscope or a Braasch single catheterizing. The differences in construction make one instrument applicable where another after a trial may prove not to be. The Squier-McCarthy electrode was found most convenient and efficient, both the No. 6 and No. 11.

One has cases, however, in which neither the ordinary electric cautery or the foregoing high frequency methods is adequate. Such cases comprise carcinomatous prostates in which a partial removal has been done and a suprapubic fistula will not close; bladder neck contractures, when a punch will not pass; also bladder neck contractures when hemorrhage is feared, or for some reason adequate attention following the punch operation is not feasible; bladder neck shelves and band hypertrophy of the region about the glands of Albarran when a punch will not enter; benign growths of considerable size, comparatively, in the posterior urethra or at the bladder neck; cases of excessive pocket formation in the prostatic bed after enucleation for benign growths.

The reason for the failure of the previously described procedures is plain. The lesions are comparatively gross but mainly focal so far as obstruction is concerned. There is simply too much tissue too dense to be destroyed by any such available and insulatable amount of electrical energy. Up to the present time, so far as I have been able to learn, there has been brought forward no substance surrounding a conducting wire in sufficiently small radius and flexible enough that it can be fed into the very largest cystoscopic or endoscopic catheter channel now in actual use, capable of insulating the amount and kind of electrical energy absolutely necessary to completely devitalize such obstructions and cause them to slough. We trust some one will soon bring to light some such substance.

In lieu of the ideal insulating substance that is also flexible, we have resorted to the use of a nonflexible insulating material which also serves the purpose of a guard to regulate the depth of penetration of the electrode points. It is simply a convenient length—8 or 9 inches—of silica tubing the diameter of a No. 11 Charriere catheter. One end is fitted into a groove of a pistol-shaped handle of fiber and made tight with a set screw. The inside diameter is approximately 1 mm. or that of a No. 3 Charriere ureteral bougie. Through the top of the pistol handle and on through the bore of the silica tubing is inserted a convenient length of drill rod or piano wire, sharpened to a needle point on the business end. The usual length is about a foot. The excess, bent over behind the handle, forms a small loop on the end in which to fix, with a watch-chain snap, the high frequency connecting cord. The sharpened end of the wire is pushed out beyond the distal end of the silica tubing to any desired distance, usually 0.5 to 2 cm., and is fixed with a second set-screw. The wall of the silica tubing being over a millimeter in thickness, acts as an efficient guard to prevent too deep penetration, and when fully up against a tissue produces a sense of resistance to the operator's fingers. The manner in which it is used is very like the treatment of a mole by an ordinary electrolysis needle, except that the needling is all by parallel insertions. The insulated and guarded needle is inserted through any open endoscopic tube most suitable for bringing that particular growth or obstruction into view and into direct line. The most generally satisfactory tube with us has been the MacGowan urethroscope. This with the vacuum-pump attachment keeps the field free from urine or blood present and the flat side enables one to place the electrode to better advantage. A MacGowan-Swinburne tube is useful sometimes. A Young's punch in bladder neck contractures and polypi that will present into the fenestrum is also exceedingly useful. Once we used a single catheterizing Braasch with water distention. In this case 1 cm. of the wire at the needle end was bent at an obtuse angle from the body of the wire to better catch a nodule and polypoid growth.

The part to be destroyed is brought into view at the end of the endoscopic tube and the electrode inserted to a depth previously determined on and insured by tightening the set-screw. The current is then turned on with the foot-switch for from two to ten seconds, depending on the amount of tissue to be destroyed, the amount of current used, and the length of the spark gap. The electrodestructive action extends radially around the needle and is quite circumscribed at both the periphery and the point. The usual diameter of the slough is 3 or 4 mm., as we have made the applications. One must use judgment as to the points of insertion, their number and their depth; usually two or three separate needle insertions being sufficient. This is best learned by experimentation with small surface growths whose progress and sloughing can be watched subsequently at frequent intervals. The sloughs come away in from forty-eight to sixty hours if the needling has been well performed.

The silica tubing is quite brittle and sometimes breaks; but a new piece is easily and quickly inserted. It would be nearly ideal except for this friability. Larger sizes than are really needed for insulating purposes are for this reason necessary. We have endeavored to find something superior. The most promising prospective substance is Bakelite. The authorized molders of Bakelite discouraged us at first in the use of this; but just recently the General Bakelite Company has given us faith that they will be able to supply us electrodes that will be more easily handled. This should give the method a wider application in the urethra and in the bladder particularly with the electrode inserted through a single catheterizing Braasch. In this way the number of treatments could undoubtedly be greatly reduced.

The type of machine used should be one giving a constant milliamperage, no matter what amount of current (in reason) is being consumed; an absolutely induced current and one which is not taken off the main transformer, thus avoiding ground shocks. This

of course means a bipolar current; a d'Arsonval current may be used, but unquestionably the ordinary d'Arsonval has been improved on for this purpose. If only this type of current is supplied by the machine, it considerably cheapens the cost and lightens the weight, thereby making it much more conveniently transportable to and from hospitals.

I shall report the following cases occurring in the private practice of Dr. Granville MacGowan and myself. Out of 39 cases of intra-urethral or bladder neck cautery operations during the past thirteen months, 31 were by either the simple electric cautery or high frequency cauterization with flexible electrodes; 8 were done by the silica insulated wire needling and bipolar current. Only selected cases were chosen for this method. There were two failures and six successful operations.

CASE 1.—W. M., a large fat man, aged 65, had complete retention for the first time in September, 1913, with practically continuous catheter life thereafter for four weeks at hospital; when the bladder was opened suprapubically a large indurated prostate with both an anterior and posterior bar was found to be the cause of the obstruction. Enucleation proved very difficult on account of the adhesions of the surrounding parts; the vesical sphincter and a portion of the seminal vesicle were partially torn away in an effort at enucleation and had to be removed with scissors. The peritoneal cavity was accidentally opened at the bottom of the wound. It was not considered necessary to dissect it away further, for there appeared to be a free enough channel without this; tissue being apparently cancerous and the hemorrhage very free, and as the peritoneal cavity had been opened in the removal of the vesicle, doubt was entertained as to his operative recovery anyway. When the packing was removed the peritoneal wound gave no trouble and had apparently closed. With time the suprapubic wound healed with a small fistula. Urination was very difficult and became progressively more so. The bladder was reopened and an attempt made to remove the anterior obstructing bar. He had a very thick abdomen, which with its powerful muscles made it impossible to reach all of the obstructing parts and do a complete resection of the growths and bar. After wearing the suprapubic drain for months he was subjected to high frequency cauterization. No instrument could be made to pass through the urethra into the bladder. A MacGowan urethroscope was inserted down to the obstruction, which presented very definitely against the opened end of the endoscopic tube but from the anterior wall. Two insertions were made, with the silica-guarded needle, about 1 cm. apart. In less than sixty hours six or seven sloughs came away and then he urinated for the first time in many months. We repeated this cooking process in three weeks, cleaning away the rough points. The suprapubic wound closed and the urine thereafter passed freely per urethram for eleven months, when the stream again slowed; and after the passing of a steel sound for dilatation, a terrific hemorrhage occurred which was very difficult to control. The suprapubic wound opened again for a few days but finally closed, and he urinates again with reasonable comfort and frequency.

Silica insulated and guarded electrode.

CASE 2.—A. S. P., aged 69, in September, 1914, had partial enucleation of the prostate which, microscopically, was carcinomatous. A piece was removed the size of a walnut. Beginning one month later through MacGowan tubes in the urethra, and Kelly tubes suprapubically, we needled the obstructing and irregular projections at four sittings. The surface healed and was fairly smooth. The suprapubic fistula closed, he went home and has urinated easily ever since.

CASE 3.—B. H., aged 76, in September, 1914, came from a neighboring state almost delirious after a twenty-four hour trip without urinating. It was impossible to introduce a cystoscope. Drained suprapubically for three weeks until phthalein increased and was constant. The operation was a partial removal of the prostate, which, microscopically, showed cancer. The suprapubic fistula healed tardily and he had from 2 to 6 ounces residual at all times. Pocketed. To improve matters he was needled through the urethra. The needling could not be done at the crest of the obstruction. The result was nil except a very disagreeable convalescence.

CASE 4.—C. C. W., aged 65, in June, 1914, underwent enucleation of the prostate for fibro-adenomas. Several months later a soft rubber catheter would not enter the bladder or return injected fluid. Some slight irritation resulted and 1 ounce residual. Needling in office was done under alypin and cocain anesthesia through a MacGowan tube. The patient passed sloughs in thirty-six hours thereafter. Since then a soft rubber catheter enters easily and residual has disappeared.

CASE 5.—I. C. G., aged 50, came to Los Angeles suffering with extremely painful erections, occasional small urinary hemorrhages and sharp pain in perineum and rectum. Small projections were at the sides and posterior surface of the urethra in front of the bladder neck. Residual, if any, not determinable, for the reason that no type of catheter large or small, nor any cystoscope, would pass into the bladder. Most of the anterior nodules were burned away with electric cautery. The needling operation was unsuccessful, the needle going into the tissues at an angle back of the urethra and not entering the crest of the obstruction. He was later opened suprapubically, and had a banded bar at the bladder neck which was cut away with rongeurs and Young's punch. Recovery, and objectively cleared up as subsequently determined by cystoscopic and urethoscopic examinations.

CASE 6.—J. W. S., aged 54, in June, 1913, stone in the bladder, with 4 ounces residual. I crushed the stone and fulgurated the polyp in the posterior urethra near the bladder neck. Cystoscopy revealed marked trabeculation and a large diverticulum on the right side. One year later residual was 70 c.c. Only long curved silver catheters or cystoscope would enter the bladder, there being inability to pass any flexible catheter. Young's punch was inserted and needling done. The spark gap had to be shortened by reason of metal contact at the end. The punch could not be easily pushed back into the bladder and so it was decided to punch out the cooked portion. After two hours in office and practically no bleeding he went home 18 miles by trolley car, returned in three days and emptied his bladder and had had practically no bleeding. Residual is 5 to 10 c.c. at present.

CASE 7.—J. W. B., aged 45, in January, 1914, underwent suprapubic cystotomy for stone. A large diverticulum was on the right side near the ureter opening. The bladder neck was very much contracted. Circumstances over which we had no control gave us no chance to examine and study the case previous to operation. The suprapubic fistula would not close. In September, 1914, a radical operation for the cure of the large bladder diverticulum was preceded by needling of the posterior bladder neck through an endoscopic tube. The patient left the hospital in seven weeks with no residual and has no residual at present.

CASE 8.—J. W. A., aged 60, had 2 ounces residual urine. The urine from the left kidney contained a small amount of pus. He had constant pains in the left testicle. There was obstruction from a nodule on the left side of the posterior

urethra near the bladder neck. An ordinary electric cautery failed to make any impression on the obstructing nodule. Operation was by needling through a single catheterizing Braasch with water distention. Endoscopic examination six weeks later showed a smooth surface and residual had disappeared.

CONCLUSIONS

1. A much greater amount of tissue can be cooked at a sitting than by ordinary high frequency methods.
2. The point of application can be made to better advantage in some cases—especially when the urethra is somewhat choked.
3. Masses can be made to slough which could hardly be impressed by the usual procedures.
4. There is little fear of even slight hemorrhage and very little postoperative reaction.

Lissner Building.

ABSTRACT OF DISCUSSION

Dr. Stanley R. Woodruff, Bayonne, N. J.: The use of the cysto-urethroscope is very important, because there are so many lesions in the posterior urethra which are entirely overlooked. It is particularly in these cases that the cysto-urethroscope is used and is of so much value, because the posterior urethra and bladder can be examined at one sitting. The instrument of Dr. McCarthy is an indirect instrument, and another good point about it is that it is a near vision instrument. Nearly all of the other indirect instruments are what we term far vision instruments; that is, one must hold the instrument at a considerable distance from the object in order to get a good view of it. This instrument being a near vision instrument, one can put it exactly on whatever object one wishes to look at and get a clear view and the focus will be good. I believe that patients, especially those coming to you complaining simply of frequency, in order to make a proper diagnosis, should have the posterior urethra examined as well as the bladder. If you pass a cystoscope into the bladder and examine that alone, you have not done enough. We have at present three young men complaining ever since birth of enuresis. They have had almost everything done without effect. These cases under examination all showed a growth of tissue back of the verumontanum, filling up the fossa and even impinging into the internal sphincter, which gives you the reason why they were troubled as they were. Every time the internal sphincter shuts down it would grasp this little mass of tissue. We use entirely the d'Arsonval current. We have given up the Oudin current. The latter makes more fuss and cauterizes more quickly, but has not as deep an effect. I have yet to see a case in which we could not burn out all the tissue necessary. We use a constant irrigation, for at the same time you can burn and carry away all the bubbles, leaving a clear field of vision. There has never been any trouble about getting sufficient penetration. The electrode which Dr. Day has shown I have had no experience with. It seems to me pretty sharp to use in the posterior urethra. Sometimes your patient makes a jump. I should be rather afraid it would traumatize the urethra. If there is any part we wish to traumatize less, it is the posterior urethra. We have observed cases following injuries to the posterior urethra, showing nervous conditions, inability to have erections, and often inability to ejaculate. We use the ordinary soft, flexible, urethral electrode with the olivary tip.

Dr. W. P. Willard, San Francisco: Surely a note of warning should be sounded against the promiscuous use of instruments in the posterior urethra. Unless a man has had experience in making an examination of the posterior urethra, and knows what he sees and can differentiate the normal from the abnormal, he should not use these instruments.

I have had within the last year two cases I would like to cite on account of the remarkable improvement they made in a very short space of time from the use of the Oudin current. One of these cases was a man of 50 and the other was a man of 70. The prostates were not enlarged in any way, and there was no residual urine, but they each complained of great frequency, one man as often as every hour and the other man probably every two hours day and night. They were examined cystoscopically and the prostatic outline appeared normal and the sphincter outline was regular. The only thing noticed was a large number of small cysts projecting, as I have seen many times before, from the prostate and within the internal urethral orifice. I used the Buerger cystoscope with the single wire and punctured as many of these cysts as I could. In both cases I did it all at one sitting. The man of 70 reported back within a week and he said he had not felt as well in twenty years. Within three or four days after the manipulation, after the irritation from the instrumentation had subsided, he said he could hold with very little difficulty his urine for three hours, and had gone as long as four hours at night.

Dr. Granville MacGowan, Los Angeles: I am astonished by the dogma put forward by one of the speakers that we must not injure the posterior urethra. No one is going to use this instrument without a definite reason therefor. The excuse is some pathologic condition requiring removal. The warning is applicable to those only who would indiscriminately operate for the sake of experience. One cannot use an instrument in the posterior urethra without traumatizing more or less. The urethra can be thoroughly anesthetized by the use of stovain or alypin nitrate, either of which will be effective generally for a sufficient length of time; if not, a reasonable amount of 10 per cent. solution of cocain placed in there with a fine urethral syringe will do the trick. This, however, should always be guarded by an equal quantity of 1:1,000 solution of epinephrin, or the tissues can be injected through an endoscopic tube by means of a very long and fine hypodermic needle with a 5 per cent. solution of novocain.

Dr. Robert V. Day, Los Angeles: Regarding the danger from the sharp point referred to by the first speaker, it is made purposely this way so that it does not shove the tissues out of the way. For that matter it may be probe pointed or bayonet shaped. In regard to the amount of tissue it will take away, it is not intended for those cases which can be treated successfully through the McCarthy fulguration urethroscope, but for those lesions that are larger than can be shown in the field at the close range of the McCarthy instrument, or those which choke the passage. I am not very much impressed with the Oudin current in cases of this kind. It relieves a great many times, but our method is not intended for small obstructions that can be reduced by the ordinary high frequency methods, which means we use extensively also, when applicable.

Florida and a "Health City"

At the meeting of the American Medical Association at New Orleans in 1885, Dr. Washington Chew Van Bibber, a distinguished physician of Baltimore, read a paper on Florida and its climate. It is an interesting circumstance that thirty years afterward the *Manufacturers Record* should find in this paper observation and comment of sufficient value to interest its readers. In its October number, the *Record* makes long quotations from this paper which deal chiefly with the advantages of the state as a winter resort, or as a resort all the year round, not only for pleasure seekers, but also for invalids of various types. Dr. Van Bibber contrasted Florida as a health resort with other sections of the United States and with the well-known resort regions of Europe.

He made the interesting proposal that a "health city" should be built in Florida, and suggested that the nations of Europe and America be invited through the medical, social and scientific press to unite in the erection and improvement of such a city. This he felt was necessary because at that time the resorts of Florida were not in a sufficient state of sanitary development and improvement to fulfil the requirements of a perfect "health city."

Dr. Van Bibber died in 1892. He did not live to see the fulfilment of his "health city" project, but with the modern development of city sanitation, all health resorts should become "health cities."

ANTEVERSION OF THE NECK OF THE FEMUR

IN CONNECTION WITH CONGENITAL DISLOCATION OF THE HIP *

RUSSELL A. HIBBS, M.D.
NEW YORK

A careful study of my failures in the treatment of congenital dislocation of the hip has convinced me that some of those failures were due to anteversion deformity of the head and neck of the femur which was not recognized before operation.

A certain number of those cases have since been treated with complete success by the method to be described.

Anteversion of the head and neck of the femur has of course been recognized, but the frequency of its occurrence has not been appreciated, at least by me, nor its influence on the final result in the treatment of congenital dislocation of the hip. Much more consideration has been given to defects in the acetabulum, and without doubt the acetabulum is more or less defective perhaps in all cases, and in some, to such a degree as to prevent cure. I believe, however, that this deformity of the femur is more often the cause of failure to secure ideal results. No case of congenital dislocation can be considered absolutely cured until the head is wholly in the acetabulum and the gait of the patient and function of the joint normal. It does not seem possible to me to obtain such a result when this deformity exists to any considerable degree.

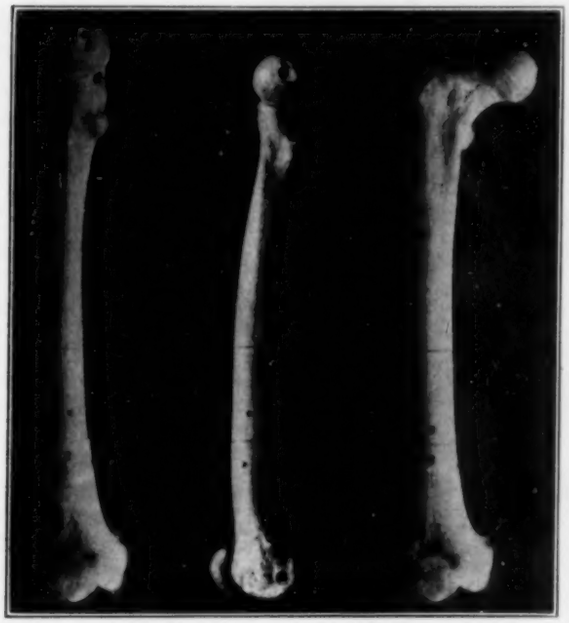


Fig. 1.—An osteotomy of the femur at its lower third for the correction of anteversion of neck. Bone at left shows anteverted head; in center, lower fragment twisted out correcting deformity; at right, deformity corrected, normal bone.

There is a certain amount of anteversion in the normal femur, but probably not more than from 10 to 15 degrees. Dr. Durham, one of my staff at the Orthopaedic Hospital, recently made a study of 200 normal femora, and found that the average amount of anteversion was 11 degrees. More than this amount is abnormal, and certainly when it is as much as from 75 to 90 degrees, grossly so. With the leg straight and the toe and patella pointing forward in the normal direction, the head of the femur cannot be completely in the acetabulum. With the head thus partially engaged in the socket, weight bearing is uncertain and there is always a limp.

Fig. 2.—Congenital dislocation of hip with anteverted head and neck of femur.

Fig. 3.—After osteotomy; deformity corrected.

The question as to where the deformity takes place is an important one. It seems probable that it is due to a twist in the shaft of the femur, because by Roentgen-ray study there is found no appreciable

* From the Service of the New York Orthopaedic Hospital.
* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

change in the relation of the head and neck to the two trochanters, as would be the case if the deformity were due to any change there.

Two roentgenograms in a given case will demonstrate this conclusively, the first taken in the usual position with the patella and toe pointing forward, the second with the femur in internal rotation, the patella and toe pointing inward. A comparison of the two plates will show that a perfectly normal head and neck exist in a normal relation to the two trochanters and indicate that the deformity is in the shaft of the bone.

It would seem logical, therefore, to treat the matter as a twist of the shaft of the femur, and correct it by osteotomy before any attempt is made to reduce the dislocation. That is what has been done in a series of twenty-nine hips in twenty-six children at the Orthopaedic Hospital, all the earlier patients having been previously operated on for dislocation once and in some instances twice, with failure. The first three cases were shown before the orthopedic section of the New York Academy of Medicine, April 18, 1913.

Fig. 4.—After reduction of dislocation; normal hip.

No attempt has been made recently to reduce the dislocation until this deformity is corrected. It is done by an osteotomy at the lower third of the femur. After the bone is divided, the lower fragment is twisted outward to the degree that the head is abnormally anteverted. After the bone unites, the patient is allowed to walk from eight to ten weeks until the external rotation of the leg is corrected by exercises and it takes the normal position in walking, the patella and toe pointing forward. At this point in the treatment the dislocation should be reduced.

The lower third of the bone is selected for operation for two reasons: first, because at this point there is the least interference with muscle attachments, and second, because both fragments are long enough to give perfect control of them. Both of these are important considerations in the accurate correction of the deformity and the preservation of the function of the muscles.

Fig. 5.—In plaster after osteotomy.

Figure 1 is a photograph of a femur on which the operation has been done.

A. E., girl, aged 5 years, had congenital dislocation of the left hip with 1½ inches shortening and an anteversion of head and neck of femur of 85 degrees. Two unsuccessful operations had been done for the dislocation, the deformity not having been recognized.

February 14, 1913, osteotomy of the femur was done and the deformity corrected by external rotation of the lower fragment; a plaster spica was applied. At the end of six weeks the plaster was removed, walking permitted and exercises begun.

May 17, 1913, external rotation was entirely corrected. The dislocation was reduced. Plaster was applied, changed at intervals of three weeks, and removed at the end of two months. Result, May, 1915: head of the femur in the acetabulum, limbs equal, joint function perfect, patient walks without limp.

The roentgenograms taken in this case are shown in Figures 2, 3 and 4. Figure 2, in the ordinary position, toe and patella pointing forward; Figure 3, after osteotomy taken in the usual position, toe and patella pointing forward showing deformity corrected, and Figure 4 showing head in the socket, a normal hip.

It does not seem necessary to report in detail more than this one case, as in every essential the procedure was the same in all of them, except the younger patients wore plaster after the hip was reduced for a longer period, three to four months.

It is important, however, to emphasize the need of great care in correcting the deformity after osteotomy. In two of my earlier cases the lower fragment of the bone was not rotated enough to entirely correct it. Figure 5 is a photograph of such a patient in plaster after operation. When this deformity exists in both hips, it is corrected in the two at the same time.

The operation for the dislocation in all of these cases has been done by the method previously described by me[1] and with the aid of the table designed for that purpose.

1. Hibbs, R. A.: An Original Method of Operating for Congenital Dislocation of the Hip, New York Med. Jour., April 25, 1908.

CONGENITAL DISLOCATION OF THE HIP

REDUCED BY MANIPULATION FOLLOWED BY ARTHROTOMY *

JAMES T. WATKINS, M.D.
SAN FRANCISCO

There has been considerable speculation as to what actually occurred when a congenital dislocation of the hip was reduced by the mechanical method. So far as my reading goes, no one has reported any attempt to determine by operative procedure whether the femoral head became directly applied to the acetabulum or remained separated from it by a fold of capsule. This paper records an attempt to solve this question.

My clinical experience with congenital dislocations of the hip has been sufficiently extensive. On the other hand, my opportunities to observe in detail pathologic anatomy have been meager.

Two specimens were seen at the clinic of the late Professor Hoffa; one was shown me by M. Redard; Dr. Bradford demonstrated for me, if I remember aright, three specimens from the Warren museum, and I made a necropsy on one several years ago for Dr. Sherman (a baby that had died of the measles).

Fig. 1.—Right-sided congenital dislocation of the hip. Reduced by manipulation and subsequently verified by arthrotomy.

Observing these, I had been able to verify what is common knowledge today of this condition, but found myself in much perplexity as to the changes brought about in the mutual relations of femoral head, capsule and acetabulum by the manipulative or mechanical reduction.

In the Hoffa specimens I noted a demifacet in the anterior rim of the acetabular roof. I regarded this as evidence in support of Lange's contention that the femoral head originally left the acetabulum by the anterior route. I noted also that the specimens from older children presented a ligamentum teres drawn out to the thinness of a thread, when it was not actually absent. It will be recalled that M. Redard, in discussing personal statistics of one thousand cases, calls attention to late-appearing deformations of the femoral head and neck in cases in which operation had been successfully performed by the mechanical method.

I felt that it would not be unreasonable to attribute this late-appearing distortion to defects of nutrition consequent on the occlusion of the artery in the ligamentum teres. I was unable to explain, however, the roughness which he and we here have noted in the floor of the acetabulum in certain of these cases. Possibly it is due to modified statics consequent on the changed shape of the femoral head.

The hour-glass constriction of the capsule was apparent in all cases in which the patient had walked, as was the forward twist of head and neck on the shaft.

One noted, too, that frequently there was a slight bowing of the neck with the concavity looking forward.

The changes in the muscles, the shortening of adductors and hamstrings, I had demonstrated clinically, but the lengthening of pelvitrochanterics, to which Lorenz had called attention, was not apparent, and until just recently did not seem particularly significant.

So much for a hasty review of the anatomy.

In 1903 I had assisted Dr. Sherman in operating on a patient on whom Professor Lorenz had previously performed a manipulative reduction. In this case it was found that the femoral head had ruptured the capsule and come to lie among the adductors of the thigh.

I pause to observe that I really believe Lorenz deliberately tried for an antero-internal transposition, because I can recall his first assistant Scholl telling us once in particular, after a mishap in which the patient went into sudden shock and there was reason to believe that one of the great vessels had been ruptured, that these accidents would not happen if the professor would content himself with a simple reduction and not try to displace the head internal to the acetabulum.

I believe that, at that time at least, Lorenz attributed the permanent stability of his reduction to the tension of his pelvitrochanterics, and that he attempted, therefore, by the maneuver described, to bring their origins and insertions nearest together during the period of immobilization. He also laid great stress on the stretching of the anterior capsule, though it is probable that he did not contemplate the rupture and escape of the head which actually occurred.

Again, Lange demonstrated by means of a series of roentgenograms, of which I had tracings, but which were lost in the great fire of 1906, that except where an exceptionally long neck was present, the so-called "frog position" was apt to put, not the femoral head, but the greater trochanter into or on the acetabulum.

Both he and Hoffa, who at that time was doing the open operation exclusively, immobilized in moderate abduction, full extension and internal rotation.

When I discussed this with Lorenz, he assured me that he had nothing to say against internal rotation provided one employed external rotation first.

The late Professor Panzeri of Milan employed abduction and an exaggerated internal rotation with knee flexed.

These were the observations, for the most part undigested, which I brought back from Europe with me. In view of them, first, and in view of the fact, secondly, that when I made the necropsy on Dr.

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Sherman's measles patient I did not think it mechanically possible to put the head by manipulation into the socket, and thirdly, because I found the capsular constriction exceedingly resistant even to a very sharp knife. I became convinced that it was not possible by manipulation to place the head in the acetabulum, cartilage to cartilage; and in this idea I remained for several years.

Last year I came across Dr. Ridlon's description of his technic. It sounded so easy that I thought I would try it as a preliminary to arthrotomy.

My opportunity came October 31 of last year, when I performed a manipulative reduction on a muscular little boy of 6 years and 3 months.

Without any great difficulty the head appeared to me to enter on rather than into the socket. My associate, however, was very sure that it was only on the posterior rim of the acetabulum.

Therefore, pending the test of the Roentgen ray, we immobilized the limb in abduction extension and internal rotation.

Then the little boy got sick and stayed sick, so that it was not until Jan. 30, 1915, that he came to the second operation.

Permit me here to interpolate from the clinical records my notes of Dec. 30, 1914, as well as those made at the time of operation.

Stereoscopic views were taken in two positions yesterday: (1) with thigh in the position in which it had been held in plaster of Paris, that is, in very marked abduction and inward rotation; (2) with thigh in diminished abduction and patella looking forward. It was agreed by all who studied the plates, Dr. Birtsch, Dr. McChesney and myself, that the head of the affected thigh was at the level of the acetabulum, and that the circle represented by the outline of the head and the circle of which the acetabulum formed an arc were concentric, but that the femoral head lay in a plane anterior to the acetabulum.

Fig. 2.—Bilateral congenital dislocation of the hip after attempted reduction by manipulation. The right had reluxated. The left was shown at operation to be within the capsule, but anterior to the bony part of the joint.

Physical examination gave a resistance beneath the femoral artery, but no undue fulness beneath Poupart's ligament, such as we see in frank anterior transpositions. There was no shortening; a false acetabulum was apparent above the site of the true one. The latter appeared to have a fair "roof."

January 30, 1915, under the strictest aseptic precautions the usual longitudinal incision between the tensor fasciae and sartorius was made, and the capsule opened. The capsule appeared to be adherent to the anterior aspect of the neck up to the junction of bone and cartilage. The head was in the acetabulum, from which it was easily luxated. Synovialis about head and capsule not adherent. No fold of capsule in front of head as latter had entered acetabulum. Ligamentum teres gone. Considerable fat in floor of acetabulum. Anteversion of head and neck not marked. Stability after reduction of dislocation excellent. Wound closed in usual way and immobilized in abduction and internal rotation.

June 14, 1915, cast off, stability good, walks with a sway but without a limp. To come back in December for inspection.

Subsequently a little girl, aged 4, appeared in my wards who had presented a bilateral congenital dislocation of the hip. These, however, had been the subject of attempts at mechanical reduction at another institution.

Here the stereoscopic pictures as well as the clinical findings seemed to show the right side in anterior transposition and on the left a frank reluxation.

An arthrotomy was therefore done on each side, using the anterior incision. On the left side reposition was easy, nor could one draw any conclusions as to the success or failure of the previous manipulation. On the right side the head was not out. In fact, because of the shrinkage which the pelvitrochanterics had undergone, it was only with difficulty dislocated. On the other hand, the dilatation of the anterior capsule had been so complete that the joint would appear to have lost the feature which kept the head pressed back into the socket when the limb went into hyperextension.

You will recall that the center of gravity of the body falls in a plane behind that in which lie the femoral heads. Therefore, in such a case during the maintenance of the erect posture, the head must be tilted forward, and sooner or later acquire a subspinous position.

Though not germane to this subject, I interpolate here that this child suffered a secondary hemorrhage on the left side two days after the operation. In stopping the hemorrhage there ensued a superficial infection, and in treating this a reluxation of the head on that side took place.

Finally, I would say I am not satisfied with this demonstration. It remains for one of us to approach the joint from the inner side, that is, behind the pectineus, then to incise the capsule longitudinally and actually see the femoral head peeping at us through the hourglass constriction. Next close the wound and do a mechanical reduction, and finally reopen the wound and see in what way the relation of head, capsule and acetabulum had become modified. Then we will cease speculation and actually know what we are talking about.

Personal Liberty and Infectious Diseases.—The right to restrict the social activities of persons suffering from, or exposed to, certain infectious diseases is today everywhere admitted. Possibly in future additional restraints will be imposed by the community on its infected members—though not necessarily without recompense to individuals—as the importance of checking certain infections becomes more widely recognized. The havoc wrought by Typhoid Mary is not unlike the damage done by a mad dervish running amuck with a naked knife in his hand. Why should the community expose itself to such exploits on the plea of maintaining personal liberty? There is no principle of personal right in such cases that must be maintained at all hazards. The question of expediency in each case must be the deciding factor. It is the right of the community to determine how far, at the moment, it is desirable to protect itself from hygienic evils. Restrictions on the carriers of disease germs, on the employers of labor, and on the drinkers of alcohol, are in themselves perfectly proper and to be judged on the basis of community welfare, not merely on the basis of individual pleasure, profit or convenience.—E. O. Jordan, Commemoration Volume, 1915.

STRUCTURAL CHANGES IN CONGENITAL HIP DISLOCATION *

WALLACE BLANCHARD, M.D.

Assistant Clinical Professor in Surgery (Orthopedic), Rush Medical College; Orthopedic Surgeon, Home for Destitute Crippled Children and University Hospital

CHICAGO

A diversity of forms of dismantlement and reconstruction are always shown in the roentgenographic presentation of a number of congenital hip dislocations taken before and several years after reduction. In every case the roentgenogram offers a suggestion as to the best position in which to place and hold the leg in the plaster-of-Paris spica in order to secure stability of the head of the femur and ultimately a good functionating joint.

In congenital hip dislocation, the obliteration of the acetabulum, the flattening of the head of the femur and the changing shape and direction of the neck are always shown in varying forms. When the mushroomed or cone-shaped head of the femur is placed and held approximately where the acetabulum once existed, the head usually again develops and cartilage grows up around it and deepens till, by a rebuilding process, a more or less functionally perfect joint is formed. The technic of bloodless reduction has steadily improved since the first visit of Professor Lorenz to this country in 1902. The forceful stretching method then employed, which frequently resulted in fracture of the femur without replacement, was superseded in 1904 by Prof. Albert Hoffa's milder manipulative reduction.

Some operators stretch every possible set of muscles and reduce over the superior or posterior rim of the acetabulum. Other operators, without preliminary muscle stretching, flex the hip and press strongly and continuously down on the knee till the head is pushed below the acetabulum, and then lift the head over the lower rim into position. The dangers of fracture or of other injury are largely decreased when the head is reduced over the more shallow lower rim. A reduction should not be accepted as satisfactory unless the head of the femur can be felt in the groin.

After the reduction, it is the position of the limb in the plaster-of-Paris spica that gives it stability or lets it go out. The roentgenogram usually gives a good indication of the position in which the leg should be held to secure stability.

If a small portion of the roof of the acetabulum is left so that it is shown in the roentgenogram even as large as a pea, a posterior dislocation may be reduced with a reasonable certainty that it will remain secure if the hip is firmly held in the Lorenz position of 90 degrees both in flexion and abduction.

The short unilateral plaster-of-Paris spica secures sufficient fixation for practical purposes of stability. The following case is presented to cover several points, including the opposing views of many European surgeons who agree with Bankart[1] that "a unilateral plaster is unsatisfactory as it does not fix the hip properly."

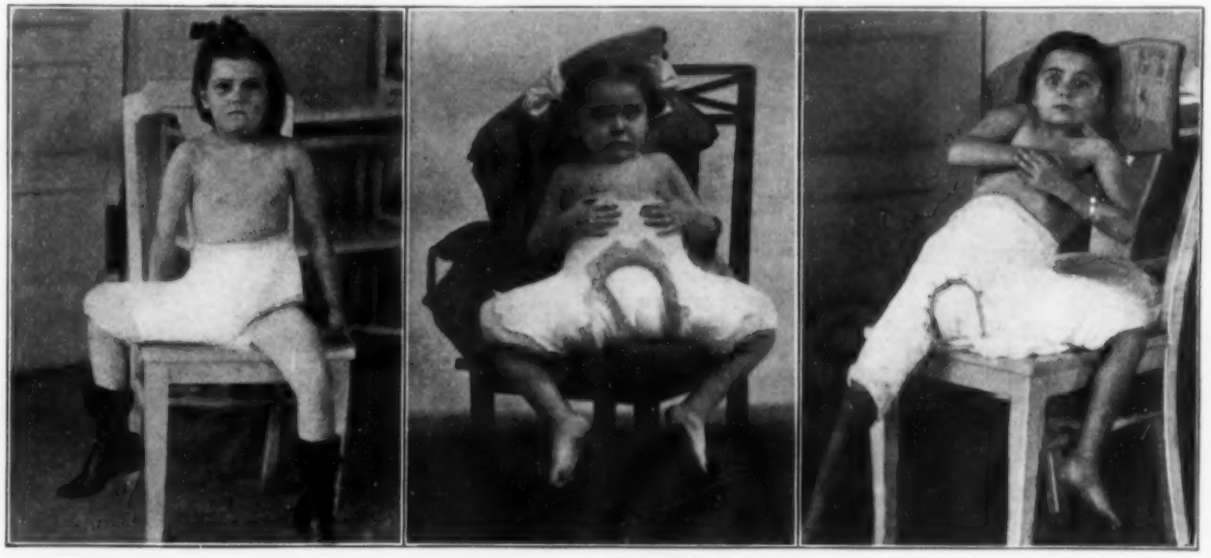


Fig. 1.—*A* (at left), B. J. (Case 1) in plaster-of-Paris spica after reduction of congenital hip dislocation. *B* (in center), R. G. (Case 2) in plaster soon after reduction. *C* (at right), H. F. (Case 3) in plaster soon after reduction.

CASE 1.—B. J., girl, aged 6 years, with a congenital dislocation backward of the right hip, and the leg 3.5 cm. short. The roentgenogram showed the acetabulum obliterated except for a small flat button that was left of the roof. The head was atrophied and mushroomed to half its normal size and thickness. The neck was shortened and elevated. The dislocation was reduced and the hip was placed in the position of 90 degrees flexion and abduction and put in the short unilateral spica, as shown in Figure 1 *A*. One month later the patient contracted diphtheria and, following the use of antitoxin, developed a dermatitis under the plaster spica necessitating its removal. Pneumonia followed the diphtheria, and after eight weeks without the plaster I found the head of the femur still in place. The rebuilding of the articulation had gone on without interruption. The plaster spica was renewed, and eight months after the reduction it was discontinued and the patient left to her own devices.

A roentgenogram (Fig. 2) taken soon after the removal of the spica showed a tilted pelvis of abduction with the head in place. A light strip between the head of the femur and the acetabulum indicates the space that is filled by the

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Bankart, A. S. B.: Treatment of Congenital Dislocation of the Hip, Brit. Med. Jour., 1913, i, 1044.

new acetabulum that is not yet sufficiently advanced in calcification to show in the picture, but is serving well for retention.

Walking for several months after the plaster spica has been removed with the leg in abduction has a double advantage of deepening the acetabulum and of keeping the head more securely in place.

A roentgenogram (Fig. 3) taken three years after reduction shows a new femoral head built up over the atrophied and

Fig. 2 (Case 1).—Roentgenogram taken soon after the removal of the plaster spica.

mushroomed head to the full size of the normal head, and above that a new acetabular roof shows dark and strong, and the hip is functionally good.

Case 2.—R. G., girl, aged 3½ years, with double congenital hip dislocation. A roentgenogram (Fig. 4) showed a double congenital hip dislocation with small buttons as the only remnants of the overhanging roofs. Reduction was made over the lower rim, and the hips put in plaster in the right angle flexion and abduction position.

A photograph (Fig. 1 *B*) was taken soon after the reduction. One month after the reduction the patient was reported dangerously ill with diphtheria, and following antitoxin a dermatitis developed under the plaster, which was removed. After four weeks without the plaster spica a roentgenogram

Fig. 3 (Case 1).—Three years after reduction.

was taken that showed both femoral heads to be in place. The legs remained in the "frog position," and a new plaster spica was applied.

The roentgenogram of this case showed small round buttons of bones as all that remained of the roofs. The visible remnants of the roofs were, of course, supported by considerable decalcified bone, and these formed buttresses against redislocations.

Case 3.—H. F., girl, aged 6 years, with left hip dislocated posteriorly and leg 3.5 cm. short. The reduction was too easy and no security was imparted to the head with the leg either in the primary position of Lorenz, or in the Lange position; but elevating the hip to 30 degrees above the Lorenz position toward Werndorff's axillary position imparted stability. A plaster spica was applied with the hip in this exaggerated position and left for eight months in the belief that the objections to so doing had not been sustained. The normal leg was included in the plaster as a counter lever to secure fixation, as shown in Figure 1 *C*. The plaster spica was removed after eight months and the patient left to her own devices. The leg was over a year coming down from abduction to normal position.

The roentgenogram (Fig. 5) taken soon after the removal of the plaster shows a tilted pelvis, decalcification of the upper end of the femur and the adjoining pelvic bone as well as a roughened outline at the original seat of the acetabulum. An irregular cavity marks the original site of the acetabular roof, which explains why the leg had to be elevated toward the axillary position to secure stability.

The second roentgenogram (Fig. 6), taken two years later, shows a recalcification of the lightened bones. Also a new roof shows the dark shadow of strength, and the head of the femur is in place. Even after three years there remained a slight suggestion of abduction, though the leg was functionally perfect.

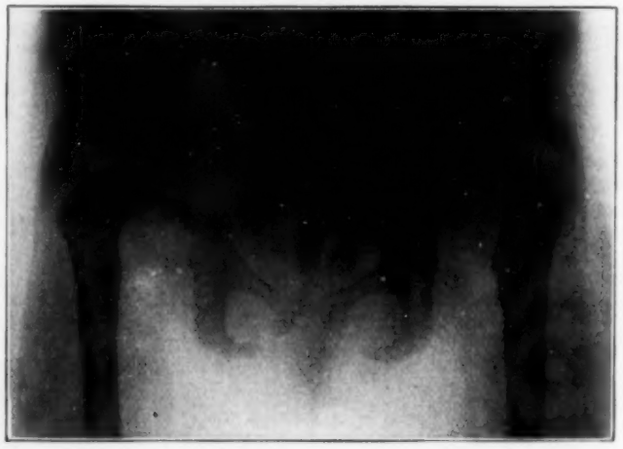


Fig. 4 (Case 2).—Double congenital hip dislocation with small buttons as the only remnants of the roofs.

From three to five years may be taken as the age for reduction to get the best ultimate results. The increasing dismantlement of the unreduced hip joint as the child grows older and the insufficient ossification in younger children that allows soft bone to give way during and after reduction must be considered. The following case presents the two sides of the question:

Case 4.—M. H., girl, aged 2 years and 3 months, with congenital dislocation backward of the right hip, and the leg 3.3 cm. short. A roentgenogram (Fig. 7) taken before reduction showed that the right upper femoral shaft and neck had about one half the diameter of the left. The head of the femur had almost disappeared, and the overhanging shelf was nearly obliterated. A roentgenogram (Fig. 8), taken two and one-half years after reduction, showed a redevelopment of the upper femoral shaft, neck and head. Also the roof had reappeared dark and strong. But note the wide strip of light between the head of the femur and the nearest bone of the pelvis that indicates the situation of the soft reforming acetabulum and femoral head. Experience shows that weight bearing will cause this pliable acetabulum and head to give somewhat so as to produce some shortening before recalcification and ossification are sufficiently advanced

to afford a stable joint. The ultimate result is likely to show that the reduction was made too early, though at present the legs are the same length and function is perfect.

Changing the position of the leg after two and a half months in plaster, as is advised by Calot and others, interrupts the rebuilding of the articulation which is necessary to secure a stable joint.

The prognosis may be said to be favorable in posterior dislocation, unfavorable in forward dislocation and unfavorable in upward dislocation, if on rotation of the leg the head can be felt both anteriorly and posteriorly.

Bankart's[1] conclusion that "no operative method reaches the excellent results obtained by manipulative reduction" has been quite generally accepted. The elimination of unnecessary violence has marked every step forward in the reduction of congenital hip dislocation.

CONCLUSIONS

Experience seems to warrant the following conclusions:

A shortened or twisted neck in a coxa valga position may look unpromising in the roentgenogram, and yet

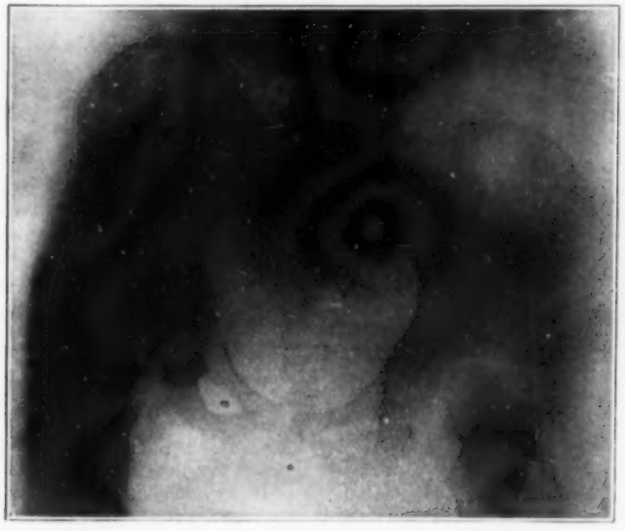


Fig. 5 (Case 3).—Soon after removal of the plaster.

present no bar to a good reduction and ultimately to a good functioning joint.

Eight months is the shortest time in which a dependable acetabulum reforms, and any radical change in the position of the leg interrupts the rebuilding process. The unchanging pressure of the femoral head accelerates the absorption of the extraneous structures that obstruct the acetabulum. After the plaster spica has been removed, the child should be left to its own devices, and the longer the abduction remains, the more stable the joint will become.

The best functional result may be obtained in children from 3 to 5 years of age and with from 2.5 to 4 cm. of shortening. There is no age limit, upward. The older the child and the greater the shortening, the more secure the replacement, if it can be made. The difficulty of reduction increases with the shortening after 4 cm. have been passed. A reduction by steps can be gained in older children with 5 cm. or more of shortening by following the practice of the Vienna school. The head should be brought as near as possible to the acetabulum and put into a plaster spica just the same as if reduced, and a second attempt, made three weeks later, may result in a satisfactory replacement.

Reduction should be delayed in all cases of 3 years or younger and that show 2 cm. or less of shortening.

Fig. 6 (Case 3).—Two years after removal of the plaster.

The child needs all the freedom that can be safely accorded, and a great majority of unilateral cases will do best in unilateral plaster spica.

The reduction must be made at an age of susceptibility to diphtheria and other children's diseases, and the two cases here given show that if the plaster spica has been on a month or more and the roentgenogram reveals even a small remnant of the roof, the plaster may be left off one to two months with the patient on the bed without much danger of a redislocation.

If the roentgenogram shows delayed ossification from rickets or other causes, the reduction must be postponed. Roentgenographic observations of the

Fig. 7 (Case 4).—Before reduction.

hips should be taken before and after reduction and at frequent intervals so that a careful watch may be kept of the bone regeneration that produces a good joint.

Perfect or satisfactory function may be obtained in a large majority of the unilateral and a fair proportion of the bilateral cases.

The case that looks the best may turn out the worst, and the reduced hip that feels the most stable may be the first to go out; but a careful roentgenographic study of each case will go far toward placing the reduction of congenital hip dislocation on a more assured basis.

15 East Washington Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. HIBBS, WATKINS AND BLANCHARD

Dr. John Ridlon, Chicago: I believe that Dr. Hibbs' operation is wholly unnecessary. He was good enough to let me replace one hip after he had turned the thigh bone, as he showed you today. I was very anxious over the case and found it very difficult because things did not feel natural. I believe that the operation recommended by Dr. Watkins and done by Dr. Sherman yesterday is wholly unnecessary. I believe that there is a great deal less deformity about the head and neck of the femur than we have been accustomed to believe. Some hips are dislocated backward and upward, some are dislocated forward and upward, and some are dislocated directly upwards. We have talked about the twisting of the neck for years and years, and believed that existed. I do not know whether it does or not. Now we are told that it is not there, that it is in the shaft, but I do not know whether the shaft is twisted or not. We have believed that all these dislocated hops had "hour-glass" contraction, so that the head could not be tucked back through the narrow passage. I do not think they all have it; some of them may, and very likely some of them do have it. We have been taught that the sockets were all malformed and filled with fat, fibrous tissue, and the cotyloid ring had so narrowed that the head could only go to the opening of the socket and not into the socket. Now I am sure that is not so in some cases. I am sure that the main fault in most of these congenital hips is because of a defective and a shallow socket, and here is my evidence, in two pictures that I will pass: first, of a man, 52 years old, a policeman, 6 feet 4 inches tall, and tremendously broad and heavy, and he had never had a particle of trouble with his hips in his life. These pictures show that in one hip only two-thirds of the head is included in the socket, and in the other hip one-half of the head is included in the socket. Here is another picture with a socket no deeper than the palm of my hand. I replaced this hip several years before Lorenz came here. When the plaster was taken off, the hip appeared to be normally in place. I did not see the child again until several years afterward when the existing condition was found. She walked with scarcely a perceptible limp. I believe no man, whether he manipulates by my method or Lorenz' method or Davis' method or any other method, or cuts down on it by Hibbs' method or Sherman's method, will get a better socket than Hoffa used to get, and many of his slipped out.

Fig. 8 (Case 4).—Two and a half years after reduction.

However you operate, whatever your methods are, you will get, according to your skill, a certain percentage of good cases, and you will have a certain percentage of cases in which the hip slips out.

Dr. Leonard W. Ely, San Francisco: During the reading of these papers a thought has occurred to me which I think would be well to mention. In visiting one of the hospitals in the city here a few days ago I saw a patient who was to be operated on for congenital dislocation of the hip. The roentgenogram showed the dislocation. There was no wound on the leg, no history of any disturbance at all. The mother had simply brought the child in and left it on account of its failure to walk. I recognized the child as a patient I had treated several months before for arthritis. I had withdrawn a syringe full of pus from the hip. The arthritis slowly subsided without further treatment, leaving behind a typical dislocation of the hip, with no sign whatever of any operation, and I wondered how many of these cases that come to us in this walk of life are of the same kind.

Dr. Russell A. Hibbs, New York: There is one other point which I did not make in my paper. There must be some relation existing between the direction of the head and neck of the femur and the direction of the center of the acetabulum. It is quite possible in some cases that the amount of anteversion in normal femurs and in normal heads varies, and to meet that condition there must be a variation in the direction of the center of the acetabulum. It is obviously very difficult to determine that question.

Dr. James T. Watkins, San Francisco: Among the procedures which we of the Children's Hospital staff have been employing of late years in the treatment of our congenital hip dislocations has been the subtrochanteric osteotomy which was first advocated by the late Professor Schede of Bonn as a means of correcting the forward twist of the upper end of the femur on the shaft. We differ from Dr. Hibbs in that we make the correction after reduction instead of before it, and attack the upper instead of the lower end of the shaft. Regarding the results of arthrotomy followed by osteotomy, our most careful estimate has given rather better than 70 per cent. of cures, which were both anatomically and functionally complete. Dr. Ridlon has lifted a great weight from my mind. If I understood him aright, one may reduce a congenital dislocation of the hip, and if God so wills it will stay reduced; otherwise it will not. Often in the still watches of the night I have worried lest imperfect results in my cases of congenital dislocation might be due to my own defects, and, humbly confessing my sins before God, I have sought diligently wherein I might do better. But now since I learn that not I but God did it, I feel better and shall sleep better.

Dr. Wallace Blanchard, Chicago: Wolf's law governs in dislocation of the hip and in the replacement of the head of the femur, the same as it governs and controls the breaking down and reconstruction of other parts of the body. The acetabulum distorts and flares out and the direction of the head and neck changes during the whole period of dislocation, but after replacement, the head builds up in the direction where the stress of weight bearing occurs and the overhanging shelf builds up where the stress of weight bearing must fall, and so Wolf's law governs and helps to replace the hip joint and make it something toward the normal.

Top Notchers and Thoroughness.—The third class are the top men, men who are careful, thorough and conscientious in their every relation to their patients and to their profession. There are more of them in Tennessee this year than there were last year, and there will be more next year than this. Their example is telling, and they all belong to their county medical societies. Had you noticed that?—Editorial, *Jour. Tennessee State Med. Assn.*, August, 1915.

THE SIGNIFICANCE OF THE FIXATION OF CERTAIN ABDOMINAL ORGANS IN THE HUMAN BODY *

ROBERT C. COFFEY, M.D.
PORTLAND, ORE.

In studying the abdominal cavity from the standpoint of comparative anatomy we find that in man the capsule of the liver has fused with the diaphragm, while in the quadruped the liver is suspended by a mesentery the same as other organs. In man the duodenum is firmly fixed to the right abdominal wall, while in the quadruped it is freely movable. In man the ascending and descending colon and the two flexures are normally fixed to the posterior abdominal wall without the intervention of mesentery, while in quadrupeds the large intestine has a long mesentery and is therefore freely movable. In man the great omentum grows down over the transverse colon and adheres to it. This does not occur in the quadruped. In man the omental bursa is usually obliterated by adhesion of its layers together. Obliteration does not take place in the quadruped. In man the pancreas has been rotated behind the peritoneum and fixed to the abdominal wall. In quadrupeds the pancreas lies between the layers of the mesentery. In the monkey, which is a quadruped with a tendency to stand erect, the pancreas becomes adherent and the duodenum is more firmly fixed than in the original quadruped.

Going more into detail we find that in early fetal life, soon after the beginning of the formation of the alimentary canal, as it elongates, the duodenum, which at first has a mesentery or mesogastrium, turns over to the right carrying, with it the buds of the pancreas. The duodenum with its mesentery or mesogastrium lies down, so to speak, on the right posterior primitive parietal peritoneum and adheres to it. Thus the duodenum and pancreas become retroperitoneal and fixed. As the colon elongates the cecal end works its way upward and to the right and then down again, locating itself on the posterior and right lateral wall of the abdominal cavity, external to the kidney. The same position is assumed by the descending colon on the left side. At these points the ascending and descending colon and posterior layers of their mesenteries become adherent to the posterior parietal peritoneum, the endothelial surfaces of which become obliterated. Thus the ascending and descending colon not only fix themselves, but put in front of the kidneys the fibrous elements of two extra layers of peritoneum and the vascular and connective tissue structures of the mesenteries of these parts of the colon. The ascending and descending colon and their angles are not only fixed thus by adhesions, but are fixed on a shelf, having an angle of 51 degrees to the perpendicular. This leaves the transverse colon unsupported, except at the flexures and for its own mesentery, until the omentum grows down in front of it and attaches to it. This adds two more layers to its mesentery but does not give it any material support, owing to the fact that primarily the omentum is a sac and the transverse colon is only attached to the posterior layer. Later on, however, often not until nearly adult life, the omental bursa becomes obliterated up to the transverse colon, which gives the colon an extra support from the bottom of the stomach, in the form of a gastrocolic omentum. It is well to bear in mind that the gastrocolic omentum gives no support whatever to the colon until such peritoneal adhesion and consequent obliteration of the omental bursa takes place.

Unfortunately these adhesions do not always take place in man. Very rarely is it true that the duodenum and pancreas fail to adhere to the posterior abdominal wall. Occasionally the omental bursa completely fails to obliterate and permits the center of the transverse colon to swing from the flexure without the support of gastrocolic omentum, and occasionally this condition produces serious intestinal stasis. Occasionally the descending colon alone is not fused with the parietal peritoneum and produces, once in a great many cases, a unilateral left floating kidney. The relative infrequency of a left is probably due in a large measure to the costocolic ligament and the gastrosplenic omentum which hold the splenic flexure up much more firmly than the right is held. From 20 to 30 per cent. of human beings have an incomplete fusion of the cecum and ascending colon and its mesentery with the posterior parietal peritoneum. This deficient fusion is of several degrees.

First, the cecum and ascending colon alone may be mobile and very baggy and dilated, swinging from a hepatic flexure which is firmly fixed in its normal position. In a few of this type of cases a false membrane or veil has formed, known as Jackson's membrane. This type occurs so frequently and is so slightly mobile that it may be classed as normal.

In the second class of cases the colon has only partially migrated and has attached the hepatic flexure to the front surface of the kidney, leaving the cecum and ascending colon (while the patient is in the erect posture) swinging from the peritoneum on the front surface of the kidney. This peritoneal attachment has been described by Longyear as a distinct anatomic entity under the name of nephrocolic ligament. In some instances the weight of this baggy cecum dropping directly downward pulls the kidney out of position and produces the frequently seen right-side floating kidney. At other times the kidney holds its position, the pendulous colon swings from its attachment as a tube hung over a nail, producing an intermittent obstruction with consequent dilatation of the cecum and ascending colon, resulting in severe intestinal stasis, or the intestine may pull loose, leaving the kidney in its normal position while the hepatic flexure is mobile also. Some of these cases have become partially fixed by a Jackson's membrane.

In the third degree of nonmigration the hepatic flexure attaches to the front surface of the duodenum, when the pendulous baggy cecum with its fluid contents, especially in an individual who has become thin, at times pulls down so strongly on the duodenum as to kink the duodenum at the ligament of Treitz, and also at the junction of the first and second portion of the duodenum. Such a case shows a duodenal stasis with the Roentgen ray, the symptoms of gastric ulcer in the clinical history, and a dilated duodenum at the time of operation. We have seen such patients whose stomach symptoms were entirely relieved as soon as the cecum and ascending colon had been removed. We have seen other cases in which the same relief was obtained by fixation of the ascending colon and the first half of the transverse colon which makes the colectomy unnecessary.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

The fourth degree of nonfixation of the ascending colon is seen occasionally and is complete nonfusion in which neither the kidney nor duodenum has been covered by the mesocolon in which very extreme intestinal stasis existed which was relieved entirely by fixation operation by the method shown in the illustration.

In a certain per cent. of human beings there is a nonfixation of both the ascending and descending colon. These are the cases in which the so-called congenital type of enteroptosis occurs, in which both kidneys and all the hollow viscera tend to fall to the bottom of the abdomen, so that when the child reaches maturity the lower abdomen is dilated, the upper abdomen is contracted, the back is straight in an effort of the body to get in under this load and assume the carrying position. We contend that this typical picture of so-called congenital ptosis is due, in nearly all if not in all cases, to a deficient peritoneal fusion, and that the peculiar body formation is nature's effort to make the best of a bad job. It is in these cases of nonfusion that all floating kidneys occur. We have been carefully watching for four years and have not found a single case of floating kidney which was not proved on the operating table to accompany a deficient fusion of the ascending or descending colon. In other words, a floating kidney is entirely a secondary condition, which accounts for the fact that the operation for floating kidneys has been considered a failure by most surgeons.

Scheme of operation for anchoring the cecum and ascending colon and suspending the first half of the transverse colon by the great omentum, for a certain form of intestinal stasis.

What is the remedy for these defects? In cases of deficient fusion on both the right and left sides, resulting in ptosis with the characteristic body formation, surgery is usually not advised nor indicated. Forced feeding, thereby increasing intra-abdominal pressure, with exercises such as Goldthwaite and also Martin have recommended, will produce the best results. Occasionally the symptoms of a patient suffering from general ptosis are so severe as to require surgical procedure, in which case nothing short of the following operation will do permanent good, namely, the fixation of the ascending and descending colon and the two kidneys, through two separate posterior incisions as described later.

Second, the opening of the abdomen and making a complete partition in the abdominal cavity by stitching the omentum beyond the colon to the parietal peritoneum from one side to the other, thus making a water-tight partition, as we have had opportunity to see at a later operation.

After this operation has been completed the upper abdomen is expanded. Fortunately this very extensive operation is rarely necessary but if any surgery is attempted in the case of general ptosis with the body habitus described by Glenard and Goldthwaite, it is perfectly useless to do less. I have performed this complete operation for general ptosis six times with very satisfactory results, and with much improvement in the patient's health.

A right-side ptosis, however, calls for more frequent surgical interference. A right-side ptosis with a floating kidney accompanied by severe intestinal stasis, pain not relieved by dietary measures, admits of surgical treatment which consists first in making a posterior incision made just as if it were intended to remove the kidney and the first part of the ureter. Before the kidney is disturbed the peritoneum is opened, the appendix removed and the colon sutured to the parietal peritoneum. The peritoneal opening having been closed, the fat capsule of the kidney is opened, a door-flap hinge 1½ inches wide, of fibrous capsule of the kidney, is peeled off each side, a piece of the quadratus lumborum muscle as large as the middle finger is split off, two or three quilt chromic catgut sutures are passed through each flap of fibrous capsule, the two from the posterior flap are drawn around back of the separated strip of quadratus lumborum and tied to the corresponding sutures from the anterior, thus using the flaps of kidney capsule like a basket handle around the muscle. The posterior part of the fat capsule is now brought up through the same slit in the muscle and sutured to the front part of the capsule, thus making an additional basket handle of fat capsule.

There are also certain cases of severe intestinal stasis in which the kidney is not movable and in which the hepatic flexure may or may not be movable, giving severe pain in the right side or possibly dragging on the duodenum and producing symptoms of duodenal ulcer, but not relieved by any kind of dietary measures. Such a patient may be entirely relieved by suturing

the cecum and ascending and first half of the transverse colon by its omentum to the parietal peritoneum. This, the most frequent operation indicated in the dealing with all defects of peritoneal fusion, is performed as follows: A long right rectus incision is made to expose the entire length of the cecum and ascending colon. If any false bands or membranes have formed they should be cut and a series of purse-string sutures of very fine linen or silk passed but not tied, beginning at the cecum. Each purse-string suture should begin at the true parietal peritoneum to true peritoneum of the colon preferably including a small bight of a longitudinal band. Small bights of the intervening loose tissue should be included. These sutures should be placed every ½ to ¾ inch back toward the normal location of the kidney where the hepatic flexure is fixed. Then the intestine is turned forward and attached by its loose peritoneal connective tissue to the lateral peritoneum to within an inch of the incision and also near to the beginning of the omentum. At this stage of the operation the wall on the median side of the incision is lifted and the omentum sutured to the anterior parietal peritoneum from the median line backward to meet the other line of sutures. The omental sutures are of chromic catgut to avoid the danger of extension of a possible infection of the abdominal wound to the line of linen sutures which in two of my early cases kept up a discharging sinus for months until the linen sutures came out.

Occasionally a very severe case of constipation is due to the lack of obliteration of omental bursa, and cannot be cured by either dietary or medical means, but is entirely cured after suturing the omentum to the abdominal wall, thereby at once obliterating the omental bursa and holding up the middle of the transverse colon, which prevents the drag of a loaded transverse colon on the flexures.

CONCLUSIONS

1. Prenatal fixation of the pancreas, duodenum, ascending and descending colon and their mesenteries to the parietal peritoneum; of the liver to the diaphragm; of the omentum to the transverse colon; and the obliteration of the omental bursa, are evolutionary changes which help to fit man for the erect posture are not found in quadrupeds.

2. All cases of floating kidney with general visceroptosis are found in patients whose ascending and descending colon with mesenteries have failed to properly adhere to the parietal peritoneum. Surgical fixation of a floating kidney without fixing the colon is not based on sound surgical and anatomic principles; hence the failure of such operations in the past and necessity for surgical fixation of the colon at the same time.

3. Many cases of intestinal stasis are caused by the disturbed relations of the parts of the intestinal tract resulting from normal fixation of the ascending colon. While most of such cases are relieved by medical means, a few require surgical fixation.

Surgical fixation of the ascending colon should be extended to the suspension of first portion of the transverse colon by the omentum, for purpose of preventing harmful angulation at the hepatic flexure.

4. Some cases of persistent stomach trouble are due to the weight of a distended mobile cecum dragging on the third portion of the duodenum, and are relieved by anchoring the ascending colon and suspending the first half of the transverse colon.

789 Glisan Street.

ABSTRACT OF DISCUSSION

DR. MAX EINHORN, New York: I am glad that Dr. Coffey does not commend these operations for enteroptosis. From my experience in enteroptosis, which extends probably over a period of twenty-seven years, I would say that I have not yet seen cases in which an operation was distinctly imperative. Enteroptosis, as such, does not demand surgical intervention. Enteroptosis itself is not of such great consequence nor does it interfere in such degree with the well being of the patients, and we can always do something to relieve them of their symptoms.

It is impossible to fasten each organ in the abdomen. I think we should take it for granted that, having developed from quadrupeds and assumed a standing position, nature probably in the course of the development has already accomplished what we require, and we do not need to worry about it at all or try to imitate those quadrupeds. I do not think they are any better off than we, so that if some organs are not entirely fixed in the abdomen that does not show that they are diseased or that we should change them. A flexible organ can sometimes do its function very well, and if we try to change it we sometimes do harm. That we should bear in mind when we want to interfere.

As to the medical treatment of enteroptosis there are symptoms sometimes requiring correction, and one should try to build up the patient. A great many of these patients with enteroptosis suffer from bad nutrition. They are afraid to eat, and owing to the lack of fat they have those symptoms. If we make them eat and support the abdomen (sometimes such a support is not urgent and they can do without it) we pull the organs up and they improve and we bring about a change in the position of those organs, especially where the enteroptosis has developed after some sickness; the loosening up of the abdominal muscles through this added fat will do wonders. If we build them up, with fat and muscles the organs very often go back of themselves to their natural positions. So in these simple means of nourishing a patient we have our ideal remedy at hand to cure a great many of these patients without surgical intervention.

DR. ALBERT GOLDSPOHN, Chicago: While the previous speaker was speaking there occurred to me what has frequently been a paradox to me in the feeding question, namely, if these patients do not eat there is something wrong about their gastro-intestinal apparatus causing lack of appetite or fear of the distress which they would afterward realize. Now, if they are to be permitted to walk about on two feet and not be compelled to go on four, how is the physician to succeed in getting them to eat? And if they are crowded to eat more than they want, is there a proportionate increase in digestion and assimilation following forced feeding?

We all operate for floating kidney rather infrequently. There is probably no operation that I do less frequently than that, and as Dr. Coffey has said, simply fixing the kidney and ignoring the colon, especially when this is done by various uses of the fibrous capsule alone or chiefly, is extremely uncertain in its duration and very unsatisfactory in its results. Dr. Longyear, in suggesting the connection between the kidney and the colon, and speaking of his nephrocolonic ligament, made a step which leads us to think of a possible cause for this dissatisfaction, but I, like many other men, have not been able to trace that ligament. I know, however, that there is a united descent between the kidney and the ascending colon; that the colon is dislocated with the kidney; and I knew that before I had learned of Dr. Coffey's explanation. The technic which I have resorted to, therefore, is chiefly that suggested by Dr. Edward Andrews of Chicago, which consists in making a hammock back of and beneath the kidney out of the fatty capsule and making use of the fibrous capsule only as an adjunct or incidentally. By drawing forward and upward the fatty capsule gathered together on both sides of the kidney, we raise the colon likewise if there is a connection between the two, and by fastening the capsule

like the meat in a sandwich, between the muscles in closing the wound by mattress sutures, we can make a fixed and permanent anchorage. This process in the operations that I have performed for floating kidney has been very satisfactory; and I think it coincides with the reasoning and the technic which Dr. Coffey suggests. I think it will be even better to do as he does: enter the abdomen from behind and laterally and anchor the colon and then do this work as he does it on the kidney.

Dr. A. N. Creadick, Portland, Ore.: Dr. Coffey's paper discussed one type of ptosis, namely, congenital, and not the acquired type such as we see in postpuerperal cases, with lost tone of the ventral abdominal wall, a flaccid lower abdomen and the resultant symptoms caused thereby. Let us lay down two or three simple rules for ptosis that will meet with common approval. First, ptosis is established when any supra-umbilical viscus is permanently and wholly below the level of the umbilicus, is then provocative of the usual course of symptoms and requires surgical intervention. No remedy can be applied to this type except the prostrate position or surgical procedure—some such operation as this devised by Dr. Coffey. Second, the "acquired ptosis" patients have some hope in medical treatment of their general asthenic state. The result of such medical treatment is very satisfactory in our hands. A large number of patients are relieved by medical treatment alone. Third, the factors which cause ptosis of the acquired type consist of (a) posture, the loss of the supporting shelf of the spinal column, which Dr. Coffey describes as an angle of 55 degrees from the horizontal; (b) the tone of the musculature of the ventral abdominal wall and (c) subperitoneal fat. In acquired ptosis the posture can be corrected by gymnastics, which also tone up the abdominal wall as well. (I use the frame devised by Dr. Martin of Chicago, elevating the foot to a window sill, securing an exaggerated Trendelenburg position, then requiring the patient to do regular leg exercises.) Hot compresses on the abdomen and forced feeding are useful.

Dr. H. O. Pantzer, Indianapolis: I proceed on a theory just the opposite of Dr. Coffey's. Instead of further fixing these organs for cure, I loosen all such angulations, kinks and distortions as interfere with function. In other words, in effect, I choose rather to reestablish the old quadruped condition. I may say that the clinical results are at least equally as satisfactory as those obtained by the fixation methods, which, too, in single cases, are not all we could wish for.

Dr. R. C. Coffey, Portland, Ore.: I never think of operating in these cases until the abdomen is black with blisters which the internist has produced with hot packs during forced-feeding process. The first thing is to have the internist try them out. My colleague Dr. Jones has an institution devoted to the forced feeding treatment. Occasionally there is a case that will not be relieved for mechanical reasons. I know an internist in my city who claims, like Dr. Einhorn, that he can cure them all, but I will say that many of the cases I get come through his hands.

A great many of our best surgeons are inclined to call everything general ptosis. Now Dr. Creadick spoke of acquired ptosis. There is the most definite ptosis seen in the abdomen. The ascending and descending colon have blended in perfectly with the parietal peritoneum and remain in normal position, but the stomach and the middle of the transverse colon have dropped down. This is the most troublesome type of ptosis. It has nothing to do with the subject of my paper and the majority are cured with fattening. Fattening will cure nearly all these cases by increasing the intra-abdominal pressure. The type we are discussing in the paper is an embryologic defect.

ROENTGEN OBSERVATION OF THE GALLBLADDER AND HEPATIC DUCTS AFTER PERFORATION INTO THE DUODENUM

R. D. Carman, M.D., Rochester, Minn.

The roentgenologic demonstration of a barium-filled gallbladder in a living patient is sufficiently unusual to warrant its report. So far as I am aware, no similar case confirmed by operation or necropsy has appeared in the Roentgen literature.

The patient, a woman aged 54, had had a cholecystostomy for gallstones in January of this year, elsewhere. She came to the Mayo Clinic May 22. In the scar of the operation wound were two sinuses, discharging pus, and surrounded by a movable, nodular mass. The total acidity was 4, all combined; no food remnants. Hemoglobin 80 per cent. The clinical symptoms consisted chiefly of some hunger distress, belching and watery regurgitation.

Roentgenogram: *A*, carcinoma, pyloric end of stomach; *B*, duodenum; *G*, *B*, barium in gallbladder; *C*, barium in hepatic ducts.

At the Roentgen examination no retention from the six-hour meal was found. When the stomach was filled with the second meal, the pyloric end showed a smooth, concentric filling defect, giving the lumen a conical form, and typical of scirrhous carcinoma. Far up in the right abdominal quadrant was a dense collection of barium with sprig-like branches (Fig. 1). From its situation this was believed to be in the gallbladder, indicating a communication between it and the upper intestinal tract, which was reported to the clinicians in charge of the case. The tendril-like branches were deemed to be due to the extension of barium into the hepatic ducts.

At operation (E. H. Beckman, June 28, 1915) the external sinuses were found to lead into a dense carcinomatous mass surrounding the gallbladder and involving the stomach. By reason of its extent the cancer was not exsectable. The gallbladder itself, which was excised, simply showed a chronic cholecystitis with particles of barium adherent to the mucosa. The fundus of the gallbladder communicated with the duodenum through a perforation.

At necropsy on the following day the perforation, which had been covered by the surgeon as well as possible, was found in the anterior wall of the first portion of the duodenum, toward the former site of the gallbladder. Metastases were noted in the liver. Some barium was seen in the hepatic ducts.

Cooperation.—Cooperating with an efficient health officer, physicians can make the efforts of the health department successful or their success impossible.—Trask.

New Instruments and Suggestions

A PRACTICAL OPERATING MASK

RICHMOND STEPHENS, M.D., NEW YORK

The variety of caps and masks in use for covering the heads and faces of doctors and nurses in an operating room indicates that the ideal head protection has not been devised. A mask or hood which completely covers the head is usually uncomfortable, while those that are comfortable do not protect the field of operation.

Fig. 1.—Practical operating mask.

A hood is the proper head dressing for routine use, but there are serious objections to the hood usually employed. It is made of muslin, and although not very heavy, is warm and interferes with free breathing. When eye-glasses are worn, the glass often becomes clouded by the breath. We have devised a hood which is more comfortable and satisfactory.

1. A gauze window about 4 inches square is inserted in the front over the mouth and nose. The window is made of two thicknesses of ordinary gauze.

Fig. 2.—Side view of mask.

2. Tapes from the corners of the eye-opening hold the mask tight across the nose and prevent it from slipping down. The broad double attachment of the tapes prevents interference with vision by the approximation of the upper and lower edges of the eye-opening.

3. A thin, fine mesh material known as Japanese nainsook is used for the body of the hood. This is cool, and just as protective as muslin.

The size of the mask must vary somewhat for different individuals, yet a universal size may be employed which can be adjusted by means of the tapes to fit the head.

A draw-string is provided at the bottom of the mask to tie around the neck.

With reasonable care when coughing, talking, etc., it seems that the gauze is a sufficient filter of the air to protect the wound.

Second Surgical Division, New York Hospital.

AN EASILY FILLED CAPSULE FOR COLLECTING BLOOD

M. W. LYON, JR., PH.D., WASHINGTON, D. C.

The ordinary Wright capsule requires considerable skill in filling. The modified form illustrated here in sectional diagram can be readily filled by any one. Sufficient serum for a Wassermann test is more readily obtained than by venipuncture in the hands of one who is not expert in the latter procedure. The capsule is made by closing one end of a piece of glass tubing and drawing out the other to a capillary point and closing the capillary end. The air-tight tube is then held in the flame just below the origin of the capillary end until the heated and expanding air causes a bulging on one side, which finally ruptures with a "pop," leaving a small round hole. After this the capillary end should be broken open. In use, blood flows into the capillary end and trickles down the side to the bottom of the tube, the enclosed air passing out the hole in the side. The capsule is easily placed in a centrifuge and serum readily obtained without danger of breaking the tube.

Capsule for collecting blood.

Sterile blood can be obtained by placing the capsule in a plugged test tube and heating in the hot air sterilizer. The capillary end may be sealed in a flame after filling. Sterile cotton over the side hole will permit air to pass out and prevent entrance of germs, or the unsealed capsule may be returned to the sterile test tube.

In calling attention to this easily filled capsule I wish to disclaim originality, as its use was shown me by a student who said it was employed in a laboratory at Asheville, N. C. It does not seem to be described in books dealing with technic.

George Washington University.

AN IMPROVED STOMACH TUBE

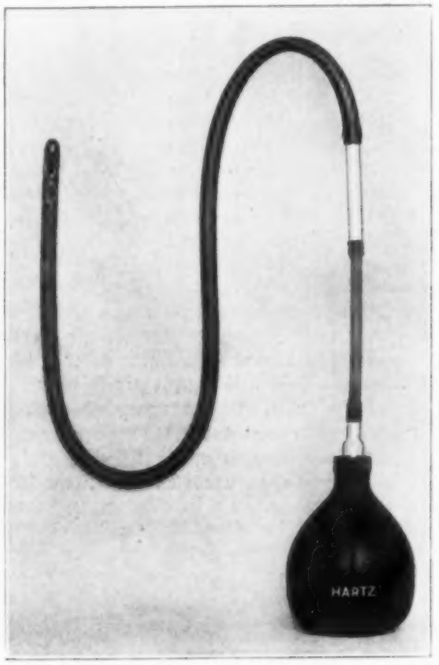
CHARLES D. AARON, SC.D. M.D., DETROIT
Professor of Gastro-Enterology, Detroit College of Medicine and Surgery

The tube is made of soft rubber, but, though readily flexible, is nevertheless rigid enough, owing to its size and the thickness of its walls, to avoid all danger of coiling or kinking in the pharynx or esophagus. It is 84 cm. (32 inches) long, rounded and solid at its lower end, with two lateral openings, one about 2 cm. (three-fourths inch) from the end, the other just above it on the opposite side. These openings run obliquely upward, and have no sharp edges; the edges have been smoothed away in molding (velvet-catheter eye), so that traumatism or other injury to the mucous membrane from contact is impossible. The openings are large, rendering aspiration of the stomach contents easy. The lower end is made solid so that no particles of food can accumulate there, as frequently occurs in tubes with a terminal culdesac. The main distinguishing feature of this stomach tube is that the closed, smooth, rounded end con-

tains a heavy piece of lead. This weighted end facilitates the passage of the tube down the esophagus without any effort on the part of the patient. Most patients regard the swallowing of a formidable-looking stomach tube as somewhat of an ordeal, but there is no need of swallowing or "gulping" when this tube is used.

METHOD OF PROCEDURE IN ASPIRATING THE STOMACH CONTENTS

The patient should sit upright, with his head bent slightly forward and held absolutely motionless. He is instructed to breathe slowly and regularly through the nose and to pay absolutely no attention to what is about to take place. The physician, standing in front of the patient, dips the free end of the tube in cold water and passes it directly to the posterior pharyngeal wall, which guides it downward toward the entrance of the esophagus. The weighted end carries the tube to the laryngopharyngeal opening, where it stops. A gentle push on the tube is now all that is necessary to carry it over the cricoid cartilage down the esophagus into the stomach, provided there is no obstruction in the esophagus. It is unnecessary to tell the patient to swallow, except in rare instances when the muscles of the neck contract spasmodically holding the tube tight. Many times the tube passes so quickly into the stomach that it is advisable to move it backward and forward to irritate the throat and induce gagging, which greatly assists the aspiration process.



Improved stomach tube.

Before passing the tube, I have the external end connected with an evacuating bulb by means of a short piece of glass tubing and a soft-rubber tube about 16 cm. (6 inches) in length. The bulb is then compressed, and a bend in the soft-rubber tube held with the thumb and finger of the left hand prevents it from filling with air. As soon as the tube reaches the stomach, the soft-rubber connecting tube is released, and the bulb, recovering its natural expanded form, aspirates sufficient gastric contents for analytic purposes.

Should lavage be desired, it can be readily and safely carried out with the tube and the evacuating bulb. The food residue in the stomach is aspirated as completely as possible with the empty bulb; the bulb is then detached, filled with water, reattached and slowly compressed until all the water has been introduced into the stomach. Then, by the mere act of releasing the pressure on the bulb, the water is withdrawn by aspiration from the stomach. This procedure is repeated with a second bulbful, and as often as may be necessary, until the water returns perfectly clear. It has been shown by Sawyer (Sawyer, John P.: Study of Methods of Lavage, Tr. Am. Gastro-Enterol. Assn., 1914, p. 146) that this method of lavage is far superior to any other.

When the tube is not in use it should never be coiled, but laid out straight. If this precaution is observed, the original shape of the tube will be maintained so that it will glide easily through the esophagus into the stomach as described.

38 West Adams Avenue.

A DIAGNOSTIC URETHRAL SOUND

FRANCIS J. W. MAGUIRE, B.S., M.D., DETROIT

This diagnostic sound is unlike the regular sound, since a short distance from the blunt point is an hour-glass-like constriction or neck (Fig. 1). A similar constriction of the sound's diameter is located on the straight portion of the instrument. The strictures are easily felt by the operator as the hollows of the sound slip by them or hug the elevated

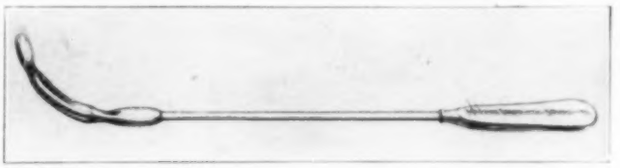


Fig. 1. — The Maguire diagnostic sound for diagnosing single or multiple strictures of the male urethra. Depressions or "necks" on the sound cause abrupt jerks as they pass the cicatrices, giving the operator a complete survey of the urethra.

points (Fig. 2). Physicians with an "educated" tactile sense very soon become familiar with the jerky feeling, and with this instrument can tell the precise condition of the caliber of the entire urethral canal. The sound is an ideal one in cases

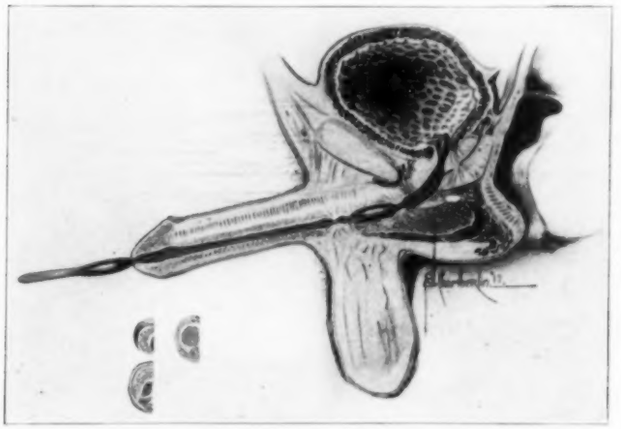


Fig. 2.—The instrument in situ. The posterior stricture is seen hugging a depression or neck in the sound.

in which the lumen is small and very sensitive, inasmuch as its construction permits the use of instruments of very small caliber. They are made at present in sizes 18, 21 and 24, French.

Team Work in Disease Prevention.—There is not a solitary line of preventive and constructive work in which we do not sooner or later run up against insufficiency of community work, of registration, of collaboration, and even of mere acquaintance of those who should work together. Over and over again we become guilty of the common mistake of giving to every good worker a bigger field than can possibly be covered.—Adolf Meyer.

Therapeutics

THE MORPHIN HABIT

With the enforcement of the Harrison Narcotic Law the number of morphin habitués will rapidly diminish. Illegitimate cases of this habit must soon either be cured or must become legitimate cases and sooner or later die of the disease on account of which the morphin is used. The morphin habit may be termed legitimate when it is acquired by patients who are suffering from an incurable painful disease. Such a habit may be life prolonging, e. g., in cancer where there is pain, and in heart disease where there is cardiac dyspnea, insomnia, etc. Incidentally, cases of morphinism will probably always occasionally occur, but they should become less and less frequent. Recurrent painful conditions should not be treated or prevented by morphin until every other resource has failed. No physician in general practice can honestly say that morphin should never be given for asthma, for cardiac dyspnea, and sometimes for terrible headaches, associated with uncontrollable vomiting. Of course, there is always danger that a few of such patients will ultimately acquire the morphin habit, and such patients will always furnish a small clientele for treatment to cure the habit. At the present time there is a considerable number of patients who have acquired the habit of self-drugging by obtaining morphin after their physicians have supposed them cured of their desire for it. Another group includes those who smoke or use opium. Such patients may be termed illegitimate morphin habitués. The following article will describe several methods for the treatment:

THE EFFECT OF MORPHIN ON THE SYSTEM

The primary effect of morphin is too well understood to require more than a brief reference: In the human being it stops pain; quiets the central nervous system, except in such patients as show an idiosyncrasy against it; causes sleep, if the dose is of fair size; inhibits all secretions, except at times that of the skin; slows up or inhibits digestion in the stomach; inhibits the peristalsis of the intestines, causing constipation; diminishes the absorption of nutritive or other fluids in the intestines; inhibits and hampers the activity of the liver, and soon of the pancreas; slows the heart; may increase blood pressure, unless the dose is a prostrating one, and of course slows the respiration. A small dose may stimulate the central nervous system, especially the spinal cord, may cause the individual to become more talkative, and may cause him to appear more active mentally, although his judgment is not improved and may be impaired, as well as his self-control. Sexual stimulation may occur, and peripheral irritations may be ignored. This action of small doses is what frequently occurs in morphin habitués when they take their ordinary dose. In other words, the ordinary dose for them acts as a small dose for the individual who is not used to the drug.

The patient who is not used to morphin may have nausea, vomiting, faintness, cardiac depression and subnormal temperature when the effects of an ordinary large dose are passing off. The habitual user of morphin becomes nervous, irritable, depressed, is unable to concentrate for any physical or mental work, often has no appetite, may have loose bowels, and may have various other nervous disturbances such as an irregularly acting heart, cold, clammy hands, cough, hiccup, nausea, and various peripheral pains, all depending on the length of time he has gone without the drug.

A considerable part of the drug is destroyed in the body by oxidation, probably in the liver and tissues; some is excreted with the urine, but a portion is excreted through the mucous membrane into the stomach and intestines, from which organs a part may be again absorbed. Excretion commences soon after the ingestion of the drug, but continues for hours and sometimes for days after the last dose has been taken, if the patient has had several doses, or is a habitué.

SYMPTOMS OF CHRONIC MORPHINISM

The morphin habitué may take his drug by inhaling the smoke from burning opium, or by taking it by the mouth, or by hypodermic injection. The use of the hypodermic syringe has become more and more frequent in these patients, as they get the action of the morphin much more quickly by this method, and they have found that it does not so much upset the stomach and digestion. The effect of the habitual use of morphin is primarily an insatiable desire for more and more frequent doses and for larger doses, in order for the individual to receive the same stimulation and the same sensations of comfort. Sooner or later there is a weakening of the moral character so that the statements of the individual are entirely unreliable, and even when not directly under the influence of the drug he will not only tell plausible untruths, but also may relate peculiar and interesting stories of events that never occurred. Later there is a weakening of the mentality, and absence of all desire for exertion, either mental or physical; the patient becomes irritable, is muscularly weak, and may show some tremors; the heart may act irregularly and become feeble; there is more or less impairment of digestion, with more or less concentrated urine, often showing bile and indican, and the mouth and skin may show a low grade of jaundice. In other words, the patient is suffering a chronic toxemia from the action of the drug, morphin.

If the dose of the drug is diminished or withdrawn the patient not only suffers the symptoms described above, but the pains may become almost intolerable, there is absolute insomnia, and the nervous irritability, excitement, and sometimes almost delirium may be succeeded by such a depression of spirits as to simulate melancholia. Consequently, the treatment of the real morphin habit is always a serious proposition. Patients may die while taking the treatment for the cure of their habit. This does not mean that it is difficult to withdraw the drug gradually and completely, without the patient's knowledge, when it has been given temporarily for a short period to an acutely sick patient. This can easily be done by the careful physician almost without the patient's knowledge, either by a gradual withdrawal of the drug or by substituting temporarily some other narcotic or hypnotic.

While there is not now the danger of writing a prescription containing opium, morphin, codein or heroin, lest it be repeated by the patient unknown to the physician, that there was before the Harrison law went into effect, still it is usually unwise for the patient to know that he is receiving a narcotic of this series. The physician may give personally to the patient the dose of the drug that he is to use.

METHODS OF TREATMENT

The choice of the method of treatment for the morphin habit is of great importance. The treatment

which will cure the habit most quickly, which is the least dangerous, and which will afford the patient the greatest comfort during the period of his craving for the morphin should be the one of choice. This is not to declare that there may not be several treatments, varying slightly in their application, that may fill these requirements.

The treatment of an individual addicted to the use of opium or morphin should not be attempted unless the physician is certain that the patient is absolutely under his care and that his directions will be carried out in the minutest detail. With a reliable nurse, treatment may be attempted in a patient's home, but it is not often advisable. If a patient is to be treated at home, the physician should remember that he may become delirious, not only from the withdrawal of the morphin, but from any one of the atropin treatments, and that he might injure himself, or might jump out of a window in order to escape and obtain, if possible, what he thinks he needs. Also, the convalescence of these patients, like hysteria, is better treated at an institution. In fact, it should be stated that generally better results are obtained in an institution for the treatment of this habit, or in a public or private hospital. The physician should exercise the greatest patience, and should show that he has sympathy for his patient during his mental and physical trial. At the same time the physician should be firm in carrying out the details of the treatment. He should also in every way encourage the patient to exercise his own willpower in controlling the symptoms, and later in refraining from the use of the drug.

SOME OF THE SPECIAL TREATMENTS OF THE MORPHIN HABIT

1. *The Towns-Lambert Treatment.*—Mr. Charles B. Towns, a layman, discovered and offered a treatment for the morphin and alcohol habit in 1904, at which time, however, he did not explain the ingredients of the preparation that he used. Later, in 1909, he did explain this treatment to Dr. Alexander Lambert of New York, who tried it, and described it in THE JOURNAL, Sept. 25, 1909. Subsequent articles have been published by Lambert and others. The treatment consists of the administration of mercury in the form of compound cathartic pills, and of blue mass, to produce free catharsis and relieve the congestion and inactivity of the liver. The other medicinal treatment is a mixture as follows:

℞	Tincture of belladonna.....	2 fluidrams
	Fluidextract of xanthoxylum.....	
	Fluidextract of hyoscyamus...each	1 fluidounce

Mix.

A 15 per cent. tincture of belladonna should be used, not the official 10 per cent. tincture.

2. *The Pettey Treatment.*—Dr. George E. Pettey (of Memphis, Tenn.) also causes catharsis, and has the patient drink large amounts of water to dilute the body fluids, and to cause watery movements and a large amount of urine. He gives his patient tub and vapor baths. His cathartic combination is as follows:

℞	Calomel	
	Powdered extract of cascara sagrada .....each	10 grains
	Ipecac	1 grain
	Strychnin nitrate.....	¼ grain
	Atropin sulphate.....	1/50 grain

Mix, and make 4 capsules.

His other medicinal treatment is scopolamin in 1/200-grain doses, spartein sulphate in 2-grain doses, and during the scopolamin treatment 20 grains of sodium thiosulphate every two hours for twenty-four hours or more.

3. *The Sceleth Treatment.*—This treatment is advocated by Dr. Charles E. Sceleth, who is medical superintendent of the Sceleth Emergency Hospital and of the Hospital of the House of Correction in Chicago. In these institutions the majority of the cases of drug addiction in Chicago are treated. The treatment (THE JOURNAL, March 13, 1915, p. 927) consists of saline cathartics and the following combination:

℞	Scopolamin hydrobromid.....	1/100 grain
	Pilocarpin hydrobromid.....	1/12 grain
	Ethyl-morphin hydrochlorid.....	½ grain
	Fluidextract cascara sagrada.....	15 minims
	Alcohol	35 minims
	Water .....q. s. ad	1 fluidram

The dose of the foregoing is varied according to the amount of morphin taken.

All final treatments of the convalescence must aim to build up the physical condition, occupy the mind of the patient, and stimulate and encourage his self-control.

THE OBJECTS OF TREATMENT

The objects aimed at in the treatment of the morphin habit are: to eliminate the morphin that may be left over in different parts of the body; to stimulate the activity of all glands, and especially the liver; to combat the narcotic by a physiologic antidote; while these objects are kept in view, to give the patient as much rest as possible, and to stimulate and support the heart and the circulation.

Severe prostration must occur with almost any successful treatment. The strongest opponent to chronic morphin poisoning is atropin in some form. The Towns-Lambert treatment contains belladonna, which contains atropin, and hyoscyamus which contains atropin as well as scopolamin. The Pettey treatment contains atropin and scopolamin. The Sceleth treatment contains scopolamin. Thus, each of these three treatments combats morphin with atropin, reduces the intake of morphin more or less rapidly, and in the meantime causes catharsis, practically to the limit of tolerance. Just why these particular combinations should be more successful than any other combination, or than atropin given hypodermatically, is a question for careful investigation by those who are in charge of institutions for the treatment of morphinism.

The exact physiologic activities of the drugs used are as follows:

Tincture of Belladonna. — This has no activity except that of atropin, and atropin stimulates the respiratory center, accelerates the heart, causes more or less contraction of the blood vessels, may raise the blood pressure, wakes up the brain, dries up all secretions, may cause flushing of the face, may cause parched lips and throat, dilates the pupils, and in poisonous doses causes serious tachycardia and respiratory paralysis.

Fluidextract of Xanthoxylum—Xanthoxylum is a drug which is so little used and has so little standing that it is not mentioned by some of the best books on materia medica. Others which mention this preparation state that it is seldom prescribed. The only official preparation is the fluidextract.

Xanthoxylum (prickly ash) contains a volatile oil which is irritant. Since prickly ash was first used as a drug it has been recommended for various conditions, but has not been proved to have any special activity.

It probably has some laxative properties, and may in small doses be a stomachic stimulant, while in large doses it would cause irritation of the stomach. Any diuretic, circulatory, or expectorant action, or any action on the nervous system is very doubtful. The question naturally arises, scientifically, if this drug in the Towns-Lambert mixture could not be replaced by some more rational preparation. In other words, it is not evident just why this atropin mixture is better when combined with prickly ash. One might almost wonder if xanthoxylum had not the same bearing in the mixture that the zodiacal sign over the Latin ℞ at the beginning of the prescription is supposed to have — an invocation to the gods that the prescription will do good.

Fluidextract of Hyoscyamus.—Hyoscyamus (henbane) contains hyoscyamin, scopolamin and a small amount of atropin. Hyoscyamin and scopolamin are really atropins, and act more or less like atropin, with the following exceptions: Hyoscyamin, which is probably always more or less contaminated with atropin, is nearly twice as strong as atropin in its ability to paralyze peripheral mechanisms. While scopolamin resembles atropin in its action, it acts as a hypnotic, unless the patient has an idiosyncrasy against all atropins, when it will cause excitation and delirium. Scopolamin acts more strongly on the peripheral nerves than does atropin. Hyoscyamin can readily cause severe prostration. In large doses scopolamin can also cause severe prostration and collapse. The fluidextract of hyoscyamus contains only 0.075 per cent. of alkaloids. The dose is 0.2 c.c. (3 minims).

It will thus be seen that the action of the fluidextract of hyoscyamus, added to the action of the tincture of belladonna, will simply intensify the action of belladonna, with possibly a slight sedative effect from the very small amount of scopolamin contained in the fluidextract of hyoscyamus. Why, then, give both hyoscyamus and belladonna?

Compound Cathartic Pill.—It should be recalled that the compound cathartic pill which enters so largely into the Towns-Lambert treatment contains a mixture of cathartics, namely, colocynth, aloes, scammony, calomel, jalap and camboge. The united effect of these cathartics, especially when given in the large doses recommended and combined with blue mass, is very free purging. This causes a depletion of the portal system, a lessening of liver congestion, an increased excretion of more or less toxic bile, and secondarily a great relief to the kidneys, on account of less toxins being absorbed from the intestines, which must later be passed off by the kidneys. There can be no doubt also that such brisk, free purging must cause a purer blood, and one that is better able to remove toxins and the products of sluggish metabolism from all parts of the body, especially from the nervous system, in these morphin patients.

Once more let it be said that there is no peculiar, wonderful action in the old and ancient compound cathartic pill. It is quite probable that any other method which would thoroughly relieve the intestines and at the same time increase the excretion of bile would have the same beneficial effect.

Pettey's purgative combination consists of calomel, cascara sagrada, ipecac, strychnin and atropin. The action of these drugs is sufficiently understood to require no further elucidation. Ipecac will increase all secretions more or less, perhaps especially the intestinal secretions. The addition of atropin to the purgative prescription might be questioned, except that it is a fact that every successful treatment seems to require something of the atropin series. Also, atropin is known to stop the griping of cathartics by dulling the peripheral nerves and preventing intestinal spasm. On the other hand, the strychnin will increase normal intestinal peristalsis, which in morphin takers has become more or less decreased. The above-mentioned cathartic is aided later by castor oil or magnesium citrate. This cathartic treatment emphasizes the fact that catharsis is what is needed, and not necessarily any particular one or more cathartic drugs. Scopolamin and strychnin are added to his treatment.

Sodium Thiosulphas (Sodium Hyposulphite).—This is largely used externally, rarely internally, and has been used as a food preservative. There is no doubt that some other drug would serve Pettey's purpose as well, especially as this drug has not been shown to have any special beneficial physiologic activity.

Spartein.—This is a liquid alkaloid obtained from the broom plant, scoparius, and has been used in medicine in the form of crystalline salt, spartein sulphate. It is a nervous depressant, and especially a motor paralyzant. Earlier experimentation seemed to show that spartein could raise the arterial pressure as well as quicken the pulse rate. Clinically, however, it has been found that in small doses it has little or no action, and in large doses it may cause circulatory depression. It has been largely used in irregular or intermittent heart and in palpitation, but it has not stood careful clinical or hospital tests, and is now very rarely used in cardiac depression.

Sceleth combines the laxative cascara sagrada with his scopolamin, pilocarpin and ethyl-morphin hydrochlorid treatment.

Pilocarpin.—This is an antagonist to scopolamin, as it promotes all secretions, especially the secretion of the saliva, of the bronchial mucous membrane, and of the sweat. It also acts against the atropin series in causing contraction of the pupils. Unlike the atropins, it is never stimulant, is always depressant, and the secondary effect is that of prostration. A single dose of the pilocarpin salt, as the hydrochlorid, nitrate, and hydrobromid, is about .01 gram, or ⅙ of a grain.

Ethyl-Morphin Hydrochlorid (Dionin).—This is the hydrochlorid of ethyl ester of morphin, that is, a morphin derivative, and the action is more or less closely like that of morphin, with a possibility that its secondary effects are more depressant. Sceleth in his treatment also uses strychnin.

These three treatments are all atropin treatments, with free purging, and the more or less gradual withdrawal of the drug, with a subsequent building up of the general system and a development in the patient of self-control.

The drugs used in these systems of treatment are not here criticized from an unfriendly standpoint, but to stimulate, if possible, a more careful study of the condition of morphinism in institutions that do not blindly follow one orthodox method. There is no halo, and there is no zodiacal sign, and there is no one prayer, that necessarily accompanies these particular combinations of drugs. It is largely the forcefulness of the men who carry out the treatment and the persistency in obtaining the object aimed at through some antagonistic drugs, profuse purging, and support of the patient through his trial.

(*To be continued*)

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SATURDAY, NOVEMBER 20, 1915

STUDIES OF PELLAGRA

The zeist theory of the origin of pellagra is not yet entirely abandoned, and some students of the subject are still endeavoring to connect the incidence of pellagra with some factor related to maize, or Indian corn, in the diet. At the present moment, however, a greater interest centers in the broader hypothesis that pellagra is due to some communicable factor and should be placed in the category related to that of infectious disease. The Thompson-McFadden Pellagra Commission[1] has stated that its efforts to discover the essential pellagra-producing food or the essential pellagra-preventing food have not been crowned with success. Their evidence suggests that neither substance exists in the population studied by them. Hence they have been inclined to postulate a communicable agency in the etiology of pellagra.

Within a few days, Goldberger of the U. S. Public Health Service and his associates have announced the experimental causation of pellagra in a group of human beings, as well as the cure and prevention of the disease among three groups of persons widely separated from each other geographically.[2] As a result of epidemiologic studies, Goldberger had concluded in effect that pellagra is not a communicable disease, that it is dependent on some as yet undetermined fault in a diet in which the animal or leguminous vegetable component is disproportionately large, and that no pellagra develops in those who consume a mixed well-balanced and varied diet.[3] Having already observed the benefits of dietary treatment prescribed by Lorenz and others,[4] Goldberger and his associates began a series of feeding experiments to confirm their epidemiologic findings.

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3. Goldberger, Joseph; Waring, C. H., and Willets, D. G.: The Treatment and Prevention of Pellagra, Pub. Health Rep., Oct. 23, 1914, p. 2821.

4. Lorenz, W. F.: The Treatment of Pellagra: Clinical Notes on Pellagrins Receiving an Excessive Diet, Pub. Health Rep., Sept. 11, 1914, p. 2357.

The first series of these to cure and prevent pellagra were undertaken at two orphanages in southern Mississippi. During the spring and summer and up to September 15, 1914, there had occurred at one of these institutions seventy-nine cases of the disease among a total population of about 200 inmates and employees, and at the other 130 cases among a total of about 220 inmates and employees. September 15, the diet at both institutions was supplemented by a very decided increase in the proportion of the fresh animal and leguminous protein foods. This increased diet has been continued to date, a period of about fourteen months. Of these cases, sixty-seven in the first institution and 105 in the second institution were continued under observation by the investigators for more than one year, and in only one case was there evidence of the recurrence of the disease, following the change in diet mentioned. Among the residents of these orphanages who had not had pellagra in 1914, a total of ninety-nine and sixty-nine, respectively, none developed the disease subsequently. In other words, in these two institutions, with a total population of approximately 420, almost 50 per cent. of whom had pellagra in 1914, the disease entirely disappeared, following the use of the supplemented diet, and in only one case has there been a recurrence.

In the second experiment, undertaken in December, 1914, in the Georgia State Sanitarium, about forty white and forty colored insane adults who had had pellagra in 1914 were placed in separate wards, and the diet supplemented, and special care taken in supervising the feeding. At the beginning, many of these patients presented "marked residuals" of their attacks. Of the pellagrins mentioned, seventy-two have remained under observation to date. Of the thirty-six colored patients, eight had given histories of at least two annual attacks, and of the thirty-six white patients, ten had given histories of at least two annual attacks. None of the seventy-two patients have had recurrence this year. During the same period, not less than fifteen of thirty-two control female pellagrins developed recurrences. In all the institutions, except for diet, the hygienic and sanitary conditions were unchanged. From these experiments, it is evident that pellagra has not only been cured but also prevented by means of appropriate diet.

In order to test further the relation of diet to pellagra, however, Goldberger and Wheeler[2] undertook to produce the disease among convicts who had volunteered for this experiment on promise of a pardon. The experiment was carried on at an isolated convict camp at which, beside the twelve volunteers, there were about seventy controls, twenty of whom were kept under special medical surveillance throughout the period of the experiment, that is, from Feb. 4 to Oct. 31, 1915. There had been no history of pellagra at this camp. These volunteers were strictly segre-

gated and kept under guard night and day. From February 14 to April 19 no change of diet was made, and on careful routine examination, no evidences of pellagra were detected. At noon on the latter date, the diet was changed, the quantities of the different articles of food comprising it during a sample week (August 2-8) being as follows:

Biscuits, 41.81 pounds; corn bread, 24.56 pounds; grits, 27.06 pounds; rice, 24.25 pounds; fried mush, 33.87 pounds; brown gravy, 37.81 pounds; sweet potatoes, 23.62 pounds; cabbage, 4.25 pounds; collards, 23.75 pounds; cane syrup, 5.94 pounds, making a total of 255.67 pounds of food consumed during the week, or 3.32 pounds per man per day, having a caloric value of 2,952 calories per man per day. The sugar was white granulated, the syrup a "homemade" cane syrup. No vegetable fats entered into the diet. The corn meal and grits were of the best quality obtainable in the local market and the same as used at one of the orphanages ("M. J."), Jackson, Miss., at which a feeding experiment to prevent pellagra was conducted and at which no pellagra occurred this year.

The general sanitary environment of the volunteers and controls was the same, but the personal cleanliness and freedom from insects and vermin were in favor of the volunteers. Of eleven volunteers who completed the experiment (one was released because of prostatitis), six developed symptoms, including a "typical" dermatitis justifying a diagnosis of pellagra. The nervous and gastro-intestinal symptoms were mild, but distinct. In all six, the skin manifestations were first detected on the scrotum, in two subsequently on the backs of the hands, and one on the back of the neck.

These positive experiments demonstrate that pellagra is a nutritional disease, but they do not single out any particular article of food. From these studies, and observations in other places, it is unlikely that any single article of food will be incriminated, for the "grits" which entered into the diet of the convicts who developed pellagra also entered into the diet of the children of one of the orphanages who entirely escaped the disease. Moreover, in Nairobi, where 119 cases have been reported, no maize had been raised, and "none had ever been brought into the country."

A statistician of the Public Health Service[5] has suggested a possible relation of the incidence of pellagra to certain conditions of an economic character. His industrial investigations show that the lower the economic status of the white American family, the greater is the pressure for sacrifices in diet, particularly in animal protein foods, since these are the most expensive. The economic status of wage earners' families in the Southern states, particularly of cotton mill families, is lower than that of wage earners' families in other sections of the country. Certain factors have tended to restrict the supply of protein foods in southern industrial localities that do not restrict, at least to the same extent, the supply of carbohydrates and fat. Budgetary studies of a large number of native white wage earners' families, generally comparable as to family income and size, indicate that the proportion of proteins in the diet of southern families is considerably less, and of carbohydrates and fat considerably greater than in the diet of northern families. Certain factors have tended to intensify this condition in recent years, particularly since the industrial depression began in the latter part of 1907. While the supply of a better balanced diet in southern industrial localities has apparently not been improved materially, the economic status of wage earners' families, especially in the cotton goods and lumber industries, has been lowered, and retail prices of foods have greatly increased, this increase being more pronounced, particularly since 1907, than in other sections of the country. The increase in retail food prices has been at least 40 per cent. higher for proteins than for carbohydrates or fat. The available data thus point to a lessened financial ability of southern wage earners' families to provide a properly balanced diet, as well as a decrease in the availability (measured by retail prices) of an animal protein food supply for the wage working population, particularly since about 1907 or 1908. Incidentally they tend to support the view that pellagra may be a deficiency disease, as are beriberi and scurvy, which have so often been discussed in relation to it.

It remains, therefore, to determine by further dietary and laboratory studies, which will of necessity be of a highly technical nature, the deficient or disproportionate elements in diet responsible for this disease. Judging by the advancements recently made, the problem will be eventually solved. In the meantime, there is available a practical means of prevention and cure, and to Goldberger and his associates great credit is due for their work. In view of the increasing prevalence of pellagra, and the fact that over 7,500 people in the United States will die of the disease during the present calendar year, the value of their studies from both public health and economic standpoints may be compared to those of the discovery of the relation of diet to beriberi, or the mosquito to the transmission of yellow fever.

5. Sydenstricker, Edgar: The Prevalence of Pellagra: Its Possible Relation to the Rise in the Cost of Food, Pub. Health Rep., Oct. 22, 1915, p. 3132.

TOBACCO AND THE HEART

The question of the effects of tobacco on the heart is an old one, and has often been discussed. The phrase "tobacco heart" has become a commonplace not only with the profession but also with the laity. Yet the amount of accurate information on this subject is still meager. This is not surprising, however, for all investigations have at least this in common: they show what a great number and variety of factors may be involved. There is indubitable evidence that the use of tobacco causes changes in the caliber of the blood

vessels; there may be a constriction or a dilatation. The former, leading to a rise of blood pressure, is the more characteristic effect. Changes in the blood vessels react on the heart. It is widely held by clinicians that nicotin (and the effects of tobacco are probably chiefly nicotin effects) has a special action on the coronary arteries; to this is usually attributed the angina-like attacks frequently seen in excessive smokers. Sensory disturbances of obscure origin, but referred to the heart, are among the most pronounced symptoms of the "tobacco heart."

Recently, special attention has been devoted to the disturbances of the rhythm of the heart, use being made of the newer methods of studying these to which attention was recently called.[1] Such studies have been made on both man and the lower animals. The latter studies are in some respects of special importance, for it is only under experimental conditions, which can be controlled, that results capable of clear interpretation can be expected in such complex conditions as are evidently present. Although in animal experiments extreme, obviously "toxic," effects are frequently studied, effects which can rarely be anticipated in man, the fundamental and possible actions of a drug are often most clearly seen in such experiments. It is unsafe, however, to predict that what seem to be extreme conditions in animal experiments will not be found in man. An interesting illustration of this is seen in the discovery of the condition of auricular fibrillation now recognized as of very frequent occurrence in heart disease. Fibrillation of the auricles was produced in dogs by Cushny, and its effects on the pulse described; Cushny and Edmunds described a case in man in which a very similar pulse occurred, and suggested that in man, too, auricular fibrillation may occur—a suggestion received with incredulity, but soon found to be amply justified.

It has long been known that nicotin acts on the heart chiefly through the nerves, the vagus and the sympathetic or accelerators. The chief action is exerted on the ganglion cells interposed in the course of these nerves between the central nervous system and their endings in the heart. These ganglion cells, like all others belonging to the autonomic nervous system, are first stimulated and then depressed by nicotin. Since these nerves are antagonists and since, also, both are in a condition of tonic activity, the vagus tending to slow and the sympathetic to accelerate the heart so that the usual rate of this organ is the resultant of these two actions, it is evident that if the activity of these nerves is either increased or diminished, several results are conceivable. Thus a slowing of the heart may result from stimulation of the vagus or from paralysis of the accelerators; an increased rate may result from either a paralysis of the vagus or from a stimulation of the accelerators. The sequence in which the nerves are affected by nicotin and the response of the heart (depending on its condition) determine the end-result: the heart may be slowed, accelerated or the rate remain practically the same. All of these effects have been seen in both animals and man in nicotin poisoning. A maximum acceleration occurs if the stimulation of the accelerators coincides with the paralysis of the vagi.

Clinically, however, irregularities of the heart accompanying the excessive use of tobacco have attracted more attention than changes in rate. Many of these irregularities have recently been traced back, in part at least, to changes in the activities of these nerves, for these nerves influence not only the rate of the heart but also the conduction of impulses from one part to another and, further, the ability of different parts of the heart to take up a spontaneous rhythm.

Thus stimulation of the vagus delays the conduction of impulses from auricle to ventricle, causing partial heart block; stimulation of the accelerators facilitates the conduction of such impulses; paralysis of the accelerators delays the conduction and so may contribute to the appearance of a heart block, especially if the vagus is in a condition of increased activity. Increased activity of the accelerators facilitates the process of stimulus formation, and so may lead to the appearance of extrasystoles. The action of the vagus is exerted primarily on the auricle and the upper part of the tissue connecting auricle and ventricle; it has little direct action on the ventricle. The accelerators influence the ventricles as much as they do the auricles, if not more, and thus the simultaneous stimulation of a vagus and the accelerators may lead to a condition of ventricular tachycardia, that is, a condition in which the ventricles are beating at a rapid rate entirely independent of the auricles.

By the use of graphic methods, including that of the electrocardiograph, Pozzi and Clerc,[2] and Bull, Clerc and Pozzi[3] have observed in dogs under the influence of nicotin a great variety of cardiac irregularities identical with those which result from stimulation of the cardiac nerves, either singly or together or from stimulation of the one and paralysis of the other. Among the effects noted were simple bradycardia (with normal rhythm) probably due to the action of the vagus on the sino-auricular node; incomplete or complete heart block probably due to disturbances of conduction (vagus effect) combined with accelerator or muscle action; a shortening of the interval between the contraction of auricle and ventricle, and finally an auriculoventricular rhythm such as may be obtained by stimulation of the accelerators and, under some conditions of the vagus; the appearance of extra-

1. The Rhythm of the Heart, THE JOURNAL A. M. A., Oct. 23, 1915, p. 1462.

2. Pozzi and Clerc: Jour. phys. et path. gén., 1913, xv, 1.

3. Bull, Clerc and Pozzi: Bull. Soc. de biol., 1914, lxxvii, 213.

systoles of various origins; marked acceleration, and a retrograde rhythm in which the auricular follow the ventricular beats.

As yet only a few of these effects have been described in man after the excessive use of tobacco; but bradycardia, tachycardia and the appearance of extrasystoles have been noted. These animal experiments, however, may help in the interpretation of symptoms already known and indicate what other symptoms may be expected. All of these nervous disturbances of rhythm from nicotin seem to be purely functional, and to disappear on the discontinuance of the drug.

SOME INTERRELATIONS OF DIET AND MILK PRODUCTION

Since the advent of our present-day knowledge of nutrition, it can no longer be believed that the proteins of the body fluids and tissues are merely replicas, so to speak, of the albuminous substances which enter into the diet. There may be a wide divergence in the chemical make-up of the food and body proteins, respectively, a fact which led to the statement, widely quoted in the lay press a few years ago, that cannibalism is theoretically an ideal mode of nutrition. The remark was, of course, originally intended to indicate that any scheme of diet which would supply the nutrient units—the amino-acids in the case of proteins—most nearly in the quantities and proportions in which they are to be used or deposited in the body, approaches the theoretically correct ration. Precisely so, one could most easily build a Gothic cathedral by demolishing carefully a structure of this type and using the building material thus acquired for the reconstruction of a new edifice.

The investigations of Abderhalden, Osborne, Mendel, McCollum and others[1] have given unmistakable evidence that individual proteins from different natural sources in the plant or animal kingdom have unlike efficiency in the nutritive functions. This is particularly conspicuous in the case of growth, for which some of the isolated proteins seem to lack essential constructive units. The recent studies carried on in this country, notably by Osborne, Mendel, McCollum and their co-workers, have aimed to ascertain what amino-acid groups are really indispensable for growth or maintenance, so that it may be known to what extent they must be provided for in any adequate dietary. We have already pointed out that so long as the constructive capacity of the body is largely unknown and this field of investigation remains open to further research, the safe guide in nutrition will direct us to the use of a liberal mixed diet, in which the law of chance makes the serious lack of any essential diet component less likely.

The production of milk calls for unique metabolic performances in which the production of protein is involved. In the case of a lactating individual, this participation of the mammary glands in the need of suitable food is far from negligible. The occurrence of lactose, special proteins like casein and lactalbumin, and the lower fatty acids in milk leaves little doubt that the function of milk production involves special constructive powers. It might be assumed, therefore, that despite the dependence of a growing organism on a suitable kind or variety of protein to secure perfect growth at a normal rate, the mammary gland is independent, to a larger degree, of the kind of protein in the diet. Synthesis might play a larger part in this structure.

Experiment alone can answer the inquiry here raised regarding the possible extent of special synthetic power for the formation of amino-acids needed to elaborate milk. It has long been known that the nature of the milk proteins is not altered by the character of the maternal diet, however much the volume of milk flow may be modified. Hart and Humphrey,[2] of the Wisconsin Agricultural Experiment Station, have examined the possible relation of the quality of proteins to milk production on cows. By making the ration of successive periods of observation strictly comparable in respect to total quantity of protein, "nutritive ratio," that is, relation of protein calories to the total available energy intake, and amount of "roughage" fed, they were able to note the amount of milk protein produced at the expense of a given unit of food protein. There was clearly a marked difference in the efficiency of the proteins from corn, wheat and milk, respectively, for continued milk production. In the concentrations of corn and wheat proteins used, the body always lost nitrogen after feeding with rations containing these nutrients, whereas, a positive balance followed the use of the same amount of milk proteins in the diet. Evidently the synthetic power of the mammary gland will not compensate for deficiencies in protein structure. Under the special conditions imposed in the Wisconsin experiments, it was found that milk proteins had an efficiency for milk production and tissue restoration of about 60 per cent., while the corn and wheat grain proteins showed an efficiency of 40 and 36 per cent., respectively.

As Hart and Humphrey express it, this opens up anew the problem of the protein requirements for milk production, which must be studied from the newer angle of protein structure. They also point out the somewhat astonishing fact of the influence of the forces of milk secretion in maintaining a yield of milk at the expense of tissue protein. Instead of finding a marked drop in the production of milk either in volume or concentration when their animals were fed

1. For a review of this subject consult Mendel, L. B.: Nutrition and Growth, THE JOURNAL A. M. A., May 8, 1915, p. 1539.

2. Hart, E. B., and Humphrey, G. C.: The Relation of the Quality of Proteins to Milk Production, Jour. Biol. Chem., 1915, xxi, 239.

on the relatively inefficient and insufficient corn or wheat ration, not only the flow but also the quality of the milk was maintained. This was, of course, done at the expense of distintegrated body tissue.

These experiences do not apply so practically to the human subject, who enjoys a wider latitude of choice in diet. Nevertheless, they give added support, if such is needed, to the desirability of including a liberal allowance of milk and milk products in the regimen of lactating women. It is doubtless true that these individuals are not infrequently producing milk at the expense of their own tissues, when a more rational scheme of diet would insure gains instead of losses.

ATTEMPTING TO CRIPPLE THE FOOD AND DRUGS ACT

The federal Food and Drugs Act was passed in 1906. By one of its most important provisions a drug product may be declared misbranded, "the package or label of which shall bear any statement . . . which shall be false or misleading in any particular." In due time, the interests affected attacked this portion of the law. A "cancer cure" quack who had been sued by the government contended that the law did not apply to claims for the curative effects of medicine but only to claims regarding composition and source of origin. The quack argued, in other words, that when Congress said "false or misleading in *any* particular" it really meant "false or misleading in *certain* particulars." When the case reached the Supreme Court of the United States the quack's contentions were upheld — in a divided opinion. So badly crippled was the Food and Drugs Act by this decision of the Supreme Court that the president sent a message to Congress urging an amendment to the law so that it might be restored to its previous efficiency. In his message the president said:

"I fear that if no remedial legislation be granted at this session the good which has already been accomplished in regard to these nostrums will be undone, and the people of the country will be deprived of a powerful safeguard against dangerous fraud."

As a result of this message the Sherley amendment was passed. This amendment declares that a drug shall be deemed misbranded:

". . . if its package or label shall bear or contain any statement, design or device regarding the curative or therapeutic effect of such article, or any of the ingredients or substances therein, which is false and fraudulent."

While the amendment did not give to the law the strength that might have been given, it gave the public some measure of protection against those who would swindle the sick. Naturally, the amendment was — and is — viewed with disfavor by the "patent medicine" fraternity, and it was bound to be only a matter of time before the exploiter of some fraudulent nostrum should attack the validity of the amendment. This has finally been done. As the original law was attacked by a "cancer cure" faker so the amendment is now being fought by a "consumption cure" promoter.

"Eckman's Alterative," a fraudulent consumption cure, was "discovered" by a "horse doctor." It was examined in the Association's laboratory and a report published in THE JOURNAL.[1] This, in effect, declared the stuff to consist, essentially, of alcohol and calcium chlorid, flavored with cloves. Later the federal authorities made a seizure of this nostrum, declaring it misbranded because, among other things, it claimed to be a cure for consumption, "whereas in truth and in fact, said article of drugs would not cure tuberculosis or consumption." The company was found guilty and a decree of condemnation and forfeiture was entered.[2] The concern thereupon carried up the matter on a writ of error and it is now before the Supreme Court of the United States.

The Eckman concern raises a number of technical points in its attempt to justify the fraudulent business in which it is engaged. These are described in a recent issue of the *Oil, Paint and Drug Reporter*. One is said to be based on the fact that the claim made that Eckman's Alterative will "cure" consumption appeared, not on the label attached to the bottle, but on the circular around the bottle. It is contended that as the contents of this circular did not become known to the purchaser until the package had been purchased by him and had left the realm of interstate commerce and entered that of domestic commerce, Congress could have no control over the wording of the circular. By far the most important point raised, however, is that attacking the constitutionality of the Sherley amendment. In its writ of error the company is said to allege that the Pure Food Law is unconstitutional, "in that it undertakes to regulate statements regarding the curative and therapeutic effect of the articles, which said statements are mere opinions which cannot be regulated by an act of Congress." Continuing further in this strain, the Eckman Company is quoted as saying:

". . . we want to call in question the power of Congress to prevent a person from making statements or claims concerning the virtue of drugs, whether modest or extravagant, and we say that an owner, when advertising his drugs has a right to exploit them and advance opinions concerning the curative properties thereof, notwithstanding the fact that such opinions may be objected to by others, and that he may make claims as to the result which will follow the use of his drugs which to some may appear unreasonable, because, in doing so, he is only doing that which the law gives him the right to do."

Moreover, this firm, engaged in one of the cruelest of the "patent medicine" frauds — that of selling an alleged cure for consumption — is said to declare:

". . . whether or not a person should be prosecuted for an offense or his property condemned, back of the prosecution

1. "Nostrums and Quackery," Ed. 2, p. 90; also a later article in THE JOURNAL A. M. A., Nov. 7, 1914.
2. Notice of Judgment No. 2995, March 30, 1914, issued Aug. 2, 1914.

or back of the condemnation, must be an offense or crime defined by law, not merely an offense that is to be determined by the state of public opinion or of scientific opinion."

The company apparently ignores the fact that the law has already made lying on the label an offense and that such a law was passed because public opinion has been aroused to the way in which the "poisoners of the public health" have, in the past, plied their wretched trade. The argument that the curative properties of drugs are matters of opinion and, therefore, not subject to legislation was splendidly met by Justice Hughes of the United States Supreme Court, one of the three members of the court who dissented from the opinion that made the Sherley amendment necessary. Said Justice Hughes:

"Granting the wide domain of opinion and allowing the broadest range to the conflict of medical views, there still remains a field in which statements as to curative properties are downright falsehoods and in no sense expressions of judgment."

This opinion must surely be held by all right-thinking persons who have given the subject any consideration.

WOMEN PHYSICIANS AND THE WAR

The present war, in draining the belligerent countries of their male population, has naturally thrown unwonted responsibilities on women. In various callings, positions from which women had previously been rigorously excluded, or to which they had been admitted only under protest, are now being thrown open, and women are eagerly invited to enter. In the medical profession especially the demands of the military service have produced a deficiency in the supply of civilian practitioners which can be remedied only by utilizing the services of women physicians.

Our London correspondent[1] reports that the medical journals in Great Britain are full of advertisements offering posts to women, and that the situation has become so acute that a large hospital sent an application to the secretary of the London School of Medicine for Women, "Send us *any* women at *any* salary." A daily newspaper also states, on the authority of the London School of Medicine for Women, that an infirmary post in the Whitechapel district, previously held only by a man at a salary of $500 a year and emoluments, is now advertised as open to a woman at $1,000 and emoluments. This extreme demand for women, of course, cannot continue indefinitely after the close of the war. Still, for many years after the cessation of hostilities, it will probably be literally impossible to fill all medical posts with men as exclusively as heretofore. Not only will the medical staffs of the armies in the field return from the front with ranks thinned by the hazards and hardships of war, but also the younger generation of men physicians will be greatly depleted for a time by the fact that the young men who should now be acquiring a medical education are serving under the flag. This prospect of a continuance of the demand for women physicians, at least for some years, has caused a marked increase in the numbers of women medical students.[2] The registration in the London School of Medicine for Women has doubled. Other British medical schools and hospitals are said to be considering the admission of women,[3] and one (Charing Cross Hospital), it is reported, has already opened its doors to women students.[4]

In Germany, according to press reports, in spite of the absence of the customary numbers of American, Russian, English and Swiss women students, the enrolment of women medical students has risen from 874 to 1,150, and the entry of German women in the medical course has been greatly facilitated by a recent measure recognizing the diplomas of girls' schools as adequate entrance credentials throughout the empire.

While at the close of the war men will tend to displace women physicians again to a greater or less extent, it may be taken for granted that the old order will never be reestablished in its entirety. If there are fields of medical work for which women are entirely unfitted, the fact will have been demonstrated and they will be replaced as speedily as possible; but if there are posts which a competent woman may fill as well as a competent man (it is said, by the way, that even in the organization and administration of Red Cross units women have done excellent service), it will be impossible for conservatism any longer to deny all opportunity to women. If there is any department of medicine to which women are especially adapted, that fact also will probably have been demonstrated on a larger scale than has hitherto been possible. After the war, in short, there will be a readjustment accompanied by more or less friction; but European women physicians may undoubtedly look forward in the end to a fair field, from which old prejudices have been to a considerable degree eliminated by the pressure of necessity. It will be interesting to see what use they make of their enlarged opportunities.

1. Women Physicians and the War, London Letter, THE JOURNAL A. M. A., Oct. 23, 1915, p. 1474.

2. The Opening of the Medical Schools, London Letter, THE JOURNAL A. M. A., Oct. 30, 1915, p. 1566. Walker, Jane: How is Medicine as a Profession for Women Affected by the War? Practitioner, London, September, 1915, p. 288.

3. Willey, Florence E.: War and Medical Education of Women, Lancet, London, Oct. 9, 1915, p. 802.

4. Modern Hospital, September, 1915, p. 150.

Marriage of Tuberculous Persons.—The supreme court of New York has decided in the case of Sobol vs. Sobol that the marriage of a person suffering from tuberculosis might be annulled at the instance of the other party to the marriage when the existence of the disease had been concealed. The court decided that in view of the possible serious consequences of such a marriage to the wife, to the children if any were born, and to the community, the marriage contract should be annulled. The legal basis of the decision was the fraud of the defendant in concealing and misrepresenting the condition of his health.—*Public Health Reports.*

Current Comment

A MODEL BILL FOR HEALTH INSURANCE

A tentative draft of an act to provide for compulsory health insurance of wage earners appears in a pamphlet[1] just issued by the American Association for Labor Legislation. This pamphlet, containing the thirty-page outline of a bill and an explanation of its provisions, embodies the results of three years' study by the social insurance committee of that association, which has been particularly fortunate in having the aid of the country's leading experts, including, among others, Miles M. Dawson, actuary, and joint author of "Workingman's Insurance in Europe"; Dr. S. S. Goldwater, late commissioner of public health of the city of New York; Dr. Alexander Lambert, chairman of the Judicial Council of the American Medical Association, and I. M. Rubinow, actuary, and author of "Social Insurance." This tentative draft provides that the cost of insurance is to be distributed among employers, employees and the state. This will entail no new expense for the working man, since the contributions of the employer and the state will enable the working man to purchase the full benefits of the act for the same outlay he now makes for burial insurance alone. The benefits included within the draft are medical care, nursing attendance, medical and surgical supplies for a limited period, cash payments during sickness for a maximum of twenty-six weeks in a year, special obstetric aid for the family, and a funeral benefit on the death of the insured. To administer the benefits, employers and employees are to be grouped in mutual associations, supervised by the state and organized according to trade and locality. It is anticipated that this method of organization, with the possibility of reducing insurance rates with an improvement in health and of coöperating with the public health authorities, will lead to an effective campaign for the conservation of health. The committee has very wisely not attempted to outline the machinery necessary to organize and provide this medical care, because it considers that provisions so vitally affecting the medical profession can be worked out most advantageously by physicians themselves. Since the pamphlet is published for the express purpose of drawing constructive criticism from the parties most interested, this is the time for the profession to express its preference. The suggestions received will be used in preparing a bill for introduction into the legislatures of 1916. It is hoped that physicians will take advantage of this opportunity and that it will be possible to avoid that lack of cooperation between the physicians and legislators which, for a time, marred some of the foreign legislation. The time to influence legislation is when it is in a formative stage. If physicians will study this important and rapidly developing problem and help to work out an equitable method of furnishing medical care and relief for working men, much dissatisfaction later on can be avoided. In England, physicians failed to make themselves heard until after the law was enacted.

1. Health Insurance, the American Association for Labor Legislation, 131 East Twenty-Third Street, New York.

A SWINDLE IN AUTOMOBILE SUPPLIES

Have you been approached by a suave salesman who is willing to let you in on a ground floor proposition to obtain your automobile supplies at cost? If you haven't, you may be! He is abroad in the land, and physicians should look out for him. They are his special "game." A certain "T. A. Buck" claims to be the representative of "the Auto Owners' Service Company of Toledo, Ohio," and offers for $10 a yellow paper certifying that the purchaser "is a member of the Auto Owners' Service Co., and shall receive all automobile accessories and supplies which he may purchase from the said company at cost f. o. b. factory for one year." But the trouble is that neither the city nor telephone directory of Toledo contains the name of the concern or the name of T. A. Buck. Further, owners of public garages and other concerns of Toledo that ought to know say that no such company exists in that city. As one of our correspondents puts it, there have been "several dozen" of such companies in Toledo, "all of which border on the fraudulent." Toledo, however, is not the only city that has been honored as headquarters for concerns that offer to furnish automobile supplies at less than cost. Physicians must be on the watch. There are reliable concerns that furnish automobile supplies on favorable terms, but these, as a rule, do not have traveling men selling certificates of membership for cash. In any event, if contracts are to be entered into, let the company send the bill in the regular way. This will give time for investigation and cool thinking after the smooth-talking representative has departed, which is far better than doing the cool thinking after the cash has departed.

THE RETIREMENT OF DR. S. S. GOLDWATER

In a brief service of less than two years as commissioner of health of the city of New York, Dr. S. S. Goldwater effected many important reforms which mark his tenure of office as unique in efficiency. The current issue of the *Weekly Bulletin* of the New York City Department of Health lists these services as follows:

1. Placing most of the important supervisory positions on a full-time basis, with a corresponding increase in the salary attaching to the positions.

2. Establishing a bureau of public health education under a director chosen as the result of an open competitive examination, and insisting on education as an indispensable factor in public health administration.

3. Establishing a division of industrial hygiene, thereby properly claiming as a health department function an important but hitherto neglected field of public health activity.

4. Establishing a division of statistical research by readjustment of existing positions within the bureau of records.

5. Revision of the sanitary code and formulation of a complete set of regulations thereunder.

6. Advancing the work of school medical inspection by providing that private physicians may make the required physical examinations.

7. Broadening the application of the dog muzzling ordinance and thereby reducing the prevalence of dog bites and the number of rabid animals in this city.

8. Waging a persistent campaign against fraudulent patent medicines and securing the adoption of an ordinance provid-

ing that the names of the ingredients be printed on the label of all nostrums sold in this city.

9. Providing for the regular annual physical examination of all employees of the department of health.

10. Reorganizing the bureau of food and drugs and placing at its head a recognized authority in this field, chosen as the result of an open competitive examination.

11. Inaugurating a campaign of education against the use of alcohol as a beverage.

12. Insisting on the recognition, as a menace to health, of overcrowding in the street cars, and compelling the street railway companies to provide the service needed to the limit of their capacity.

THE JOURNAL from time to time has commented on some of these enterprises. Perhaps of greatest importance are those reforms listed under headings five and eight. They represent widely different aspects of the work of a modern health department, but are evidence of the thoroughly scientific, yet at the same time intensely practical knowledge of his work possessed by the retiring commissioner. Some of the reforms are distinctly novel, and yet the campaign of education against the use of alcohol and the recognition of overcrowding in street cars as a menace to health, all will agree, are distinctly problems within the scope of an adequate health service. In conducting these activities, Dr. Goldwater has not in any case exceeded the duties of an efficient health officer, but has demonstrated that the office may be filled to best advantage by a man of thorough scientific training, untiring zeal and uncompromising courage. It is gratifying to learn that his successor, Dr. Haven Emerson, "is in full accord with the aims and policies of the retiring commissioner."

EDWARD LIVINGSTON TRUDEAU

When Dr. Edward Livingston Trudeau, whose death is announced in another column, himself a sufferer from tuberculosis, sought health in the Adirondack Mountains, in 1884, there were available in this country practically no provisions for the treatment and control of tuberculosis. The establishment of the Adirondack Cottage Sanatorium at Saranac Lake in New York marked the erection of the first institution devoted to the fresh air treatment of tuberculosis and stimulated the movement for sanatoriums, hospitals and dispensaries devoted wholly to this disease. Now, after thirty years, there are approximately 575 sanatoriums and hospitals with a capacity of 35,000 beds, 450 tuberculosis dispensaries, more than 1,000 physicians and over 4,000 nurses devoted wholly to the treatment and study of tuberculosis. More than 400 open air schools attest the practicality and success of Trudeau's idea. All are expressions of the influence of the Adirondack Cottage Sanatorium. In connection with the sanatorium should be mentioned the work of the laboratory established by Trudeau at Saranac Lake. During the last two decades monumental and important contributions to the study of tuberculosis, particularly the field of immunity, have emanated from this laboratory. Under the guidance of Dr. Trudeau, a number of men have studied at Saranac Lake, whose names today are of international importance in their relation to the study and control of this most dread disease. There is something stimulating in the very idea of the fresh air treatment of tuberculosis. There is something of the hero in the work of Trudeau, who, himself a sufferer from a wasting and fatal disease, devoted a lifetime to the alleviation of the distress of fellow sufferers from tuberculosis. Certainly, his name should endure as one who devoted himself, without hope of personal or pecuniary gain, to the proving of a principle of lasting benefit to mankind.

SECTS IN MEDICINE—THEIR ABSURDITY

On another page[1] appears a statement regarding the action taken by the Ohio State Medical Board in its attempt to regulate the medical cults in Ohio under the new law. The situation in that state furnishes an excellent illustration of the utter absurdity of the conditions which must result in any attempt to recognize by legislation the various medical cults which are continually springing up and demanding the right to practice medicine under lower educational standards than are required of physicians. The fact that fourteen different cults are specifically mentioned in the Ohio law shows how ridiculous the situation has become. Much confusion already exists in all but a few of the states in which there has been legislation recognizing sectarianism or cults. The New York legislature, in 1907, recognizing the possibility of an endless number and variety of cults arising in the future, refused to recognize any, and provided a single license and the same educational qualification for all who desired to treat the sick. Similar action has recently been taken by the New Hampshire legislature. In other states the measures thus far provided as the result of the clamor of these cults have been compromises; they have resulted in lowering, to a greater or less extent, the minimum qualifications of those who are to practice the healing art, and to the same extent subjecting the public to the danger of ignorance and incompetence from those so licensed.

SUBSCRIPTION SWINDLERS—ONCE MORE A WARNING

In the department of Queries and Minor Notes in this issue of THE JOURNAL appears again a warning against a fraudulent soliciting scheme twice previously mentioned in THE JOURNAL.[1] Several letters have been received from physicians in New York and New Jersey, indicating that this form of subscription swindling is particularly active at this time. The young man who works the scheme approaches physicians with the story that he is anxious to acquire a college education and that this may be obtained by securing subscriptions to various periodicals, which entitles him to a number of votes. He then presents a subscription blank like the one reproduced in THE JOURNAL, October 23. Several forms are used under such headings as the "Cornell Educational Association," "Michigan Educational Association," the "National Society

1. Medical Education, THE JOURNAL A. M. A., this issue, p. 1838.

1. Cornell Education Association—A Warning, General News, THE JOURNAL A. M. A., Sept. 4, 1915, p. 888; Subscription Swindlers Still at Work, Oct. 23, 1915, p. 1472.

of Universities," etc. We are trying our best to warn our readers regarding this particular scheme because it is one that appeals to the generous and philanthropic instincts of the average human being. It is, therefore, the most contemptible type of swindle. So far as THE JOURNAL is concerned, those representatives who are authorized to collect money carry a letter of authorization signed by the Editor and General Manager, bearing the seal of the Association and the signature of the agent.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Personal.—Dr. J. C. Helper, Woodriver, who a month ago was afflicted with anthrax, has been pronounced cured.——Dr. James M. Postle, DeKalb, was severely injured in an automobile accident near Bartlett, November 4.——Dr. William S. Howell, Winnebago, who has been ill for several months, is convalescent.——Dr. Eley E. Perisho, Streator, was operated on for appendicitis in the Streator Hospital, November 4.——Dr. Harriett B. Ward, Elgin, is preparing to leave for Los Angeles where she expects to spend the winter and may make her home.——Dr. Auda Garrison, Galatia, fractured both bones of the right forearm while cranking his automobile, November 5.

Warning Against Diphtheria.—On November 12, Dr. C. St. Clair Drake, secretary of the State Board of Health, declared that Illinois is threatened with one of the worst epidemics of diphtheria in the history of the state. The disease has appeared simultaneously in every section of the state and its spread is greatly feared by the health authorities. Dr. Drake urges that quarantine be rigidly enforced; that no case of diphtheria be declared cured until examination of cultures from the throat prove negative; that all children exposed to the disease should have cultures taken, that the prophylactic use of antitoxin should be general, and that tests should be made to ascertain what members of the family are subject to the disease.

Chicago

Personal.—Dr. Theodore B. Sachs has been reappointed a member of the board of trustees of the Municipal Tuberculosis Sanatorium and continues as director of the institute.——Dr. Thomas A. Hogan has been appointed a member of the staff of the dispensary of the Municipal Tuberculosis Sanatorium.

Typhoid Carriers Under Guard.—The commissioner of health reports that he has three typhoid carriers under surveillance. They will be guarded night and day by policemen as the County Hospital will not take patients against their will and as placing them in the Municipal Contagious Disease Hospital would expose them to the risk of other communicable diseases.

Semicentennial of Hospital.—The semicentennial of Mary Thompson Hospital for Women and Children was celebrated from November 16 to 20. On November 16 a public meeting was held in the rooms of the Chicago Woman's Club at which a history of the hospital was read by Miss Brayton, and addresses were made by Mrs. George Bass, president of the board of trustees, Mrs. Ella Flagg Young, Dr. Homer M. Thomas and others. On Wednesday a formal reception was given at the hospital at 6 p. m., in honor of the graduate and pupil nurses of the Training School for Nurses of the hospital. On Thursday evening a banquet was held at the LaSalle Hotel, and during the entire week special clinics were given by members of the staff at the Hospital, from 8 a. m. to 5 p. m.

INDIANA

Personal.—Dr. Marcus Raydin, Evansville, who has been seriously ill with gastritis, is now convalescent.——Dr. Samuel A. Shoemaker, Bluffton, started November 1 for a trip to the Pacific Coast, visiting en route many of the medical colleges of the West.

Dispensary-University Trouble Settled.—The Board of Health of Indianapolis and the Indiana University School of Medicine have come to a satisfactory settlement of the difficulties mentioned in the last issue of THE JOURNAL. An agreement has been made whereby the college is allowed to use the City Hospital for clinical purposes and the city agrees to pay the college for conducting a free dispensary. The board of health retains the power to appoint and discharge employees and in case of disagreement, the question will be decided by a committee of three composed of one member of the faculty of the college, one member of the board of health and a third to be selected by these two.

IOWA

Health Survey Finished.—The health survey which has been conducted by Dr. Freeman of the United States Public Health Service in Dallas County has been completed. In 500 homes which were revisited the owners or occupants had already made efforts to follow out the suggestions made on the occasion of the first visit.

Home for County Society.—Dr. Archelaus G. Field, Des Moines, has made a proposition to the Polk County Medical Society to provide the organization with a home. Dr. Field's offer is to allow his residence on Thirteenth Street to be appraised by a competent board and after the price is fixed agrees to donate a considerable part of the cost to the society.

KANSAS

Public Health Nursing Association.—The Public Health Nursing Association of Topeka now has nine nurses on its staff, one of whom is to be assigned to duty with patients suffering from communicable diseases.

Personal.—Dr. Philip B. Matz, Leavenworth, has been appointed physician to the Kansas Penitentiary, succeeding Dr. James T. Faulkner, resigned.——Dr. Walter S. Sutton, Kansas City, has returned after service with the French Army.——Dr. Charles Hedinger, Canton, is still in the active practice of medicine although he has just celebrated his ninety-fourth birthday.

MARYLAND

Meetings.—A meeting of the Physicians' Civic Club was held November 11, at the Medical Library Building, for permanent organization and to listen to an address by Frederic C. Howe, commissioner of immigration at New York.——The permanent organization meeting of the Interstate Psychiatric Association will be held at the Sheppard and Enoch Pratt Hospital, at Towson, on November 23. A constitution has been drawn up and will be voted on at this meeting. Addresses will be made by Dr. Lewellys F. Barker, Baltimore, and Dr. Henry A. Cotton, Trenton, N. J.

Pasteur Institute to Close.—Announcement has been made that the work of the Pasteur Institute at Mercy Hospital, which is a department of the University of Maryland, is to be discontinued, and that the federal government will take up the work of the institute. Patients desiring treatment will have to go to New York, Philadelphia or Washington until the government makes arrangements with the local health department for the distribution of the serum used in the treatment of hydrophobia. Dr. Nathaniel G. Keirle, director of the institute, who has been in charge of the work for the past twenty years, will continue as professor of medical jurisprudence at the university.

Academic Day.—Academic Day was observed at the University of Maryland on November 11. At the celebration, the Provost, Dr. Thomas Fell, announced that the university officials hope in a short time to acquire an endowment of a quarter of a million dollars at a very conservative estimate. He further added that the outlook for making the University of Maryland the recognized state university by the next legislature was encouraging. The event was the first since the merger of the university with the College of Physicians and Surgeons. The three institutions now incorporated as the University of Maryland—the university proper, St. John's College and the College of Physicians and Surgeons—were represented.

Personal.—Dr. Frederick Janney Smith, chief resident physician of the private medical wards at the Johns Hopkins Hospital, has resigned to become superintendent of the Henry Ford General Hospital in Detroit.——Dr. Ralph B. Seem, lately in charge of the dispensary of Johns Hopkins

Hospital, has been made first assistant superintendent, to fill the vacancy caused by the resignation of Dr. Karl H. Van Norman.——Dr. Lewis A. Sexton has been promoted from admitting physician to the directorship of the dispensary, succeeding Dr. Seem.——Dr. Martin L. Jarrett, Jarrettsville, is improving after undergoing an operation at St. Joseph's Hospital.——A luncheon was given in honor of Dr. Hugh H. Young, Baltimore, by the Chamber of Commerce at San Antonio, Texas, November 11. In the afternoon a reception was given in Dr. Young's honor by the local chapter of the United Daughters of the Confederacy.——Dr. John D. Fiske, Baltimore, fell while boarding the steamship *Manhattan* at Canton, November 4, sustaining painful injuries.——Dr. William B. Hunter, Baltimore, superintendent of Kernans' Hospital and Industrial School for Crippled Children, has resigned and will practice in Wilmington, N. C.——Dr. Charles A. Hellingsworth, Bel Air, is reported to be critically ill.

MASSACHUSETTS

Mental Hygiene Exhibit.—A mental hygiene conference and exhibit was held in Ford Hall, Boston, November 17 to 19, under the auspices of the Massachusetts Society for Mental Hygiene.

New Surgical Unit for War Service.—The second Harvard surgical unit to carry on the work at a British base hospital, which was inaugurated last spring, under the charge of Dr. E. A. Nichols, is rapidly being recruited. All the nurses have been enrolled and many of the medical officers. The unit will be in charge of Dr. David Cheever, Jr., and Dr. Wilfred Grenfell of Labrador was one of the first to volunteer.

Problems of State Health.—At the quarterly meeting which followed the meeting of the State Association of Boards of Health, October 28, the present defects in the executive and financial operation of boards of health in large towns of the state, were discussed. E. A. Ingham, Boston, claimed that an experienced medical man cannot be secured to serve on boards of health because of insufficient salaries and the many duties imposed on those who do serve. Septic sore throat, which has recently been added to the list of reportable diseases, was described by Dr. Eugene R. Kelley and Dr. Francis P. Denny, Brookline, advocated free hospital treatment for contagious diseases. Prof. W. T. Sedgwick of Harvard Medical School urged adequate training in the health service through conferences and courses of instruction. The meeting was presided over by Dr. Milton J. Rosenau of Harvard Medical School.

Personal.—Dr. George C. Shattuck of Harvard Medical School has returned from Serbia and at the University Club, November 4, gave an address on his experience there, illustrated by stereoptican views.——Dr. Charles A. Keegan, Arlington, was struck by an automobile in Nashway, November 4, dislocating his shoulder, fracturing his nose and rendering him unconscious. He is under treatment at St. Joseph's Hospital.——Dr. Louise Taylor-Jones, Boston, has returned from service in Serbia.——Dr. Merrill Foote, who has been on duty at Mrs. Harry Payne Whitney's Hospital at Juilly, France, arrived home, October 5.——Dr. Hugh Barr Gray has been appointed superintendent and physician to the Washingtonian Home, Boston, succeeding Dr. D. A. Ellsworth, deceased.——Dr. Alura A. C. Hughes has been placed in charge of the division of child hygiene of the Health Department of Boston.——Dr. E. Philip Lasky has been elected school physician of Haverhill, succeeding Dr. Hugh Donahue, resigned.

MICHIGAN

Diseases Close Schools.—The death of one child and the illness of several other children from infantile paralysis has caused the closing of the schools at Bentley.——Because of an epidemic of diphtheria the schools of Caro were closed for the week, November 2.

Personal.—Dr. Oscar LeSeure, chief surgeon of Grace Hospital, Detroit, since 1889, was the guest of honor at a dinner given by his medical friends November 12 at the Hotel Statler. Dr. Albert McMichael, president of the Detroit School Board, presided and about one hundred and twenty were present at the dinner.——Dr. Frank B. Marshall, Muskegon, fractured his arm while cranking his automobile, November 7.——Dr. Samuel E. Barnhart, Battle Creek, who has recently recovered from injuries received in an automobile accident at Whittier, Calif., expects to return to his duties by the first of next month.——Dr. Bartlett H. McMullen was elected mayor of Cadillac, November 2.——Dr. James W. Inches, St. Claire, has gone abroad.

MISSISSIPPI

Sanitary Survey.—Dr. J. A. Walter Bancroft, U. S. P. H. S., has been making a sanitary survey of Forest County with the idea of instructing the inhabitants of the rural commmunities what to do to safeguard their health, happiness and homes.

Society Favors Institution for Feebleminded.—At a recent meeting of the Hinds-Rankin Medical Society in Jackson, a resolution was unanimously adopted memorializing the state legislature to take steps toward the establishment of a vocational institution for the care of the feebleminded of the state.

Tuberculosis Campaign Work.—The Mississippi Anti-tuberculosis Campaign Committee is endeavoring to secure funds for the establishment of a tuberculosis camp in Mississippi and has ordered one million Christmas seals which will be offered for sale in the state. All the funds derived from the sale of the seals will go toward the establishment of the sanatorium.

Pellagra Squad Pardoned.—The twelve convicts at the Rankin State Prison Farm, who were selected as the pellagra squad to work out the theory of Surg. Joseph Goldberger, U. S. P. H. S., that pellagra is produced by an unbalanced ration and can be cured by proper food, have been pardoned. One was released because of physical breakdown and eleven who had completed the test which began February 15, received pardons, November 1.

NEW YORK

Tuberculosis Notes.—The proposition calling for an appropriation of $30,000 for the establishment of the Steuben County Tuberculosis Sanatorium has received a majority of nearly 3,000 votes.——The referendum in Jefferson County for a tuberculosis hospital was carried by a majority of 5,020.——The tuberculosis camp maintained in Caton for the past four months for the Corning Social Service Society was closed October 28. With two exceptions the patients showed a decided improvement in health and strength as a result of their stay at the camp.

Conference of Medical Inspectors.—The annual fall conference of the New York State Association of Medical Inspectors and Physical Educators will be held November 23, at Rochester, meeting as the Section on Hygiene and Physical Education of the New York State Teachers' Association. The chairman of the section is Dr. Clinton P. McCord, Albany. The morning session will take up the subjects of: attainment of correct posture; the physical aspects of school hygiene; defective vision among school children; military training in public schools; hygiene of school buildings, and some aspects of nutrition of schoolchildren. The afternoon program consists of an informal round-table discussion of the various aspects of physical training and school hygiene.

New York City

Dinner to Dr. Goldwater.—A testimonial dinner was given by the officials of the Department of Health to Dr. Sigismund S. Goldwater on Saturday evening, November 6, at the Hotel Savoy. Dr. William H. Guilfoy, registrar, acted as toastmaster. On this occasion Dr. Goldwater outlined his conception of a modern health department as one that would serve for the maintenance of good health rather than temporizing with attempts to cure ill health.

Columbia Plans School for Health Officers.—Plans have been prepared for a two-years course of study at Columbia University leading to the degree of doctor of science in sanitation. Those taking the course must have the degree of M.D. or of C.E. in sanitary engineering or an equivalent degree. It is stated that the teaching staff will be made up of members of the faculties of the schools of graduate engineering, law, medicine, political science and pure science. The course will probably be offered for the academic year 1916-1917.

Merger of City Department.—The mayor and controller plan extensive reorganization of the city government along lines intended to promote economy and efficiency. The first step will be to ask the legislature to revise the city charter, combining into one organization the present health department, department of charities, and Bellevue and allied hospitals, under the name of the Department of Social Service. It is announced that the head of this department will be Dr. Sigismund S. Goldwater who recently resigned as head of the health department.

Occupational Diseases in Fur and Felt Shops.—A report recently made by Dr. Louis I. Harris of the Health Depart-

ment as to the sanitary and clinical conditions found in the fur and felt shops of this city shows that more than 1,000 employees were examined. Among these 80 cases of chronic mercurial poisoning were found 65 cases of chronic pharyngitis, 95 of hypertrophic rhinitis, besides a number of cases of sore gums, tremors, tuberculosis, skin diseases, asthma, and anemia. As a result of this, orders have been issued to seventy-one factories to install additional health protective devices, such as dustless fur-beating machinery, protective clothing, and hygienic floors.

Mortality of Children of Alien Parents Lower than that of Native Population.—The results of a study of the relative mortality of children of native and of foreign parents made by Dr. William H. Guilfoy of the Health Department has just been made public. It shows that of every 1,000 children of native white parentage 44 boys and 35 girls do not reach their fifth year, whereas on the same basis 39 boys and 32 girls the off-spring of foreigners die in early childhood. The infant mortality figures are increased when the records of negro children are considered. Among this class 112 males and 95 females out of every 1,000 die before the fifth year. The better showing made by the children of alien parentage is attributed to the fact that foreign mothers are more likely to stay at home and look after their children than are native mothers, and also to the fact that the health authorities come into more personal contact with the foreign mothers.

Anniversary Meeting of Academy.—At the anniversary meeting of the New York Academy of Medicine, November 18, the topic of discussion for the evening was "Disease and Crime—An Analogy, Has Not the Time Come When Ethics, the Law and Medicine Should Join Hands to Form a Constructive Program Aiming to Do for Crime What Has Been Done for Disease Through Systematic Study and Classification, Leading up to Effective Measures of Prevention and Intelligent Individual Treatment?" The speakers were George W. Wickersham, president of the Bar Association of New York, who spoke on "The Concern of Society in the Problem of Crime"; Warden Thomas Mott Osborn of Sing Sing Prison, who discussed "The Part Which Penal Institutions Might Be Made to Play in the Solution of the Problem"; and Chief Justice Harry Olson of the Municipal Court of Chicago, whose topic was "The Progress That Has Been Made and What the Future Promises."

Report of Public Health Committee of Academy of Medicine.—The public health committee of the New York Academy of Medicine has presented a summary of its activities since last May, among which may be noted the following: They have studied the problem of drug addiction and find that in dealing with this problem there is a lack of constructive social policy; they recommend the development of the Farm Colony at Warwick so that cases of drug addiction may be admitted to it and adequately cared for and they also recommend changes in the present court procedure with reference to commitments and the establishment of a colony for female cases, and follow-up service for patients discharged from the Farm Colony, in order to guide them in securing employment and keep them from falling again into the conditions that were responsible for the development of their drug habit; in cooperation with the Municipal Civil Service corporation this committee has considered the proposed change in the qualifications for medical inspectors in the department of health and has endorsed the requirement of one year's experience in a hospital as intern as a condition of eligibility for medical inspectorship in the department of health; they urged the importance of oral tests in examination for medical positions; they have interested themselves in urging the transfer of quarantine from the state to federal control; in street cleaning, studying the relation of dust and dirt to mortality and morbidity; in studying, in cooperation with the American Museum of Safety, the effects of certain occupations on the health of those employed in such occupations; in assisting in the preparation of a circular letter issued by the State Department of Health which was intended as a guide to physicians in the performance of vaccination against smallpox, and in considering the question of sewage disposal into Lake Mohansic; and they have made recommendations for a state policy for dealing with mental defectives, and a number of suggestions designed to add to the efficiency of the health department of the city, such as recommending the establishment of two new milk stations, endorsing the department's request for several additional physicians and nurses in tuberculosis clinics, and the request of the department of charities for a larger nursing staff in the city hospitals.

PENNSYLVANIA

Fountain Unveiled.—The memorial fountain at the entrance of the Twelfth Street Playgrounds, Harrisburg, erected in honor of Dr. William H. Jones, an esteemed colored practitioner of Harrisburg, was dedicated with appropriate ceremonies, November 6.

Medical Society Conducts Clinic.—Physicians from the eight northwestern counties of Pennsylvania conducted a medical clinic held at St. Vincent's and Homot hospitals, Erie, November 9. The clinic was held under the auspices of the Erie County Medical Society.

Dispensary Opened.—The Allentown Free Medical Dispensary of the Associated Charities was formally opened, November 4, and the third annual meeting of the Associated Charities Society was held at the recently acquired headquarters. The dispensary will be under the direction of Dr. William H. Hartzell.

Children's Ward Opened.—The new children's ward of the York Hospital was opened October 27. The ward has accommodations for twenty-five patients and at the time of opening eight were under treatment. The ward was donated to the hospital by Dr. H. David Smyser, York, and the equipment was supplied by the Ladies' Auxiliary Society.

Jefferson Alumni Hold Meeting.—At the annual meeting of the Jefferson Medical Alumni Association of northeastern Pennsylvania, held in Scranton, October 21, special medical and surgical clinics were given by members of the faculty of the college. In the evening a banquet was held at which the following officers were elected: President, Dr. Frederick L. Van Sicle, Olyphant; vice-presidents, Drs. Edward F. Hanlon, Hazleton; George R. Andreas, Wilkes-Barre; and Lewis Edwards, Kingston; secretary, Dr. John D. Williams, Scranton; treasurer, Dr. M. J. McGuire, Wilkes-Barre; auditor, Dr. Merton E. Marvin, Luzerne.

Personal.—Dr. Joseph A. Stockler, Mont Alto, has been appointed laryngologist at the State Sanatorium, Hamburg. ——Dr. Howard L. Hull, Chambersburg, has been appointed associate chief medical inspector of the Department of Health of Pennsylvania with headquarters at Harrisburg.——Dr. Fannie Davis, Pittsburgh, is reported to be critically ill in a hospital in Pittsburgh.——Dr. Frank I. Walters, Pine Grove, who has been seriously ill, is reported to be improving. ——Dr. George W. Mellon, Beaver, has returned from service with the American Red Cross at Belgrade.——Dr. John Spearman, Sharon, has returned after service of a year and one-half with the German army at Gleiwitz, Silesia.

Philadelphia

Vital Statistician Resigns.—Miss Eva Deerdorff, who has been chief of the division of vital statistics of the department of health and charities since February, 1914, has resigned to assume the position of assistant director of the bureau of municipal research.

University Approved Merger.—On November 8 the trustees of the University of Pennsylvania empowered their finance committee to make arrangements with the committee representing the trustees of the Medico-Chirurgical College for the merging of the two institutions. The Medico-Chirurgical board has given the same power to its committee. The joint meeting was held November 15.

Testimonial Banquet.—A testimonial banquet was given to Dr. Daniel J. McCarthy, November 4, to celebrate his return from service in the war zone.——A dinner was given by the West Philadelphia Medical Society, October 26, in honor of Dr. Charles E. A. Codman, president elect of the Medical Society of the State of Pennsylvania. Dr. John Welsh Choskey acted as toastmaster.

Aid Association Election.—At the thirty-seventh annual meeting of the Aid Association of the Philadelphia County Medical Society, November 8, a bequest of $5,000 by the will of Dr. Eugene I. Santee was announced. This raises the total beneficient fund to $50,000. Dr. Jacob R. Shellenberg was elected president; Dr. James T. Wilson, vice-president; Dr. Lewis H. Adler, Jr., secretary, and Dr. John B. Turner, treasurer.

Personal.—Dr. Richard H. Harte, former director of health and charities, in this city, is one of the six surgeons appointed by President Wilson on the newly created board of first aid standardization. The board will teach civilians first aid in time of peace, that the knowledge may be available for military requirements in the time of necessity.——Dr. Rufus S. Reeves has been appointed surgeon to the University Settle-

ment Dispensary at Twenty-Sixth and Lombard streets.——Barton Cooke Hirst received the degree of LL.D. from Pittsburgh University at the ceremonies incident to the dedication, on October 28, of the Elizabeth Steele Magee Hospital.

Health Budget.—The council's committee on health and charities visited a number of public institutions on November 9, the annual visit incident to recommending appropriations for the coming year. Dr. S. Lewis Ziegler, director of health and charities, accompanied the committee men. He explained that the bureau of health asked for $754,340 for next year, as against $456,265 given this year, an increase of $298,075. In the bureau of charities $1,039,688 is asked for, or $179,336 less than was given this year. This decrease is due largely to the fact that a number of sums are available this year for improvements, including $100,000 for the erection of a power plant at the Home for the Indigent at Holmesburg, $80,000 for a power plant at the Institution for Feeble Minded at Elwyn, $40,000 for steam and electric ducts and cables at the same place, and also $30,000 for a sewage disposal plant, $38,160 for a heat, light and power plant and $60,655 for the erection of buildings for the care of the feebleminded.

SOUTH CAROLINA

Personal.—Dr. Davis Furman has been reelected chairman of the Greenville board of health.——Dr. Luther A. Riser, Columbia, is taking a special course in public health conservation at Tulane University, New Orleans.

Hospital News.—Magdalene Hospital, Chester, has made an application to amend its charter that it may be known as Pryor's Hospital.——Dr. Frank H. McLeod will entirely rebuild his hospital at Florence at a cost of about $30,000.——St. Mary's Hospital, Anderson, owned and operated by Dr. C. Singleton Breedin, was opened to receive patients, October 26.

Tuberculosis Items.—The Greenville County Tuberculosis Camp was formally opened November 2. The camp has a modern building of sanitary construction and will accommodate from sixteen to twenty patients.——An acre of land one mile beyond Ridgewood has been donated by Mr. L. T. Wiles, Eau Claire, as a site for a tuberculosis camp. Plans have been prepared for four open air cottages, each to accommodate four patients. There are at present eleven patients in the camp.

TENNESSEE

Health Talks.—As a part of the public health campaign which is being carried on actively in Nashville, almost every pulpit in the city was occupied October 17 by physicians.

Tuberculosis Camp to Remain Open.—The tuberculosis camp at the Tri-State Fair grounds, Memphis, will be kept open all winter under the direction of the Batchelor Baby Association. During the summer 220 children were cared for and there are at present six in residence.

New Pellagra Hospital.—A movement has been inaugurated by Hamilton County to take immediate steps in providing an isolation hospital for the treatment of persons suffering from pellagra.——At the Orchard Knob Hospital there have been about fifty deaths from pellagra this year.

Personal.—Dr. Robert H. Newman, Knoxville, who has been on duty with the American Red Cross in Germany for several months, has applied for further leave of absence and expects to go to Russia.——Dr. Philander D. Sims, Chattanooga, celebrated his eighty-seventh birthday anniversary, October 22.

Hospital News.—Large additions are to be made to the private hospital of Drs. Robert P. Oppenheimer and Henry J. Heiss, Knoxville. Improvements will include a large and modernly equipped operating room.——Baptists of Memphis plan to erect a new wing to the Baptist Memorial Hospital to cost $100,000.

Contagious Disease Ward.—Contracts have been let for an isolation ward to be erected on the rear of the Erlanger Hospital lot, Chattanooga. The plans call for a one-story building with two wards each of four beds, eight private rooms, a sterilizing room and quarters for the resident nurse. The building is to cost $6,000.

Sanatorium Trustees Appointed. — The governor has appointed the following trustees to establish the Tennessee State Sanatorium for Tuberculosis: Drs. Olin West, Nashville, and Jere L. Crook, Jackson; and Messrs. W. P. Shipp, Knoxville; George D. Richardson, Murfreesboro, and George R. Burry, Rogersville. The board has already looked over the Herbert domain, one of the sites proposed for the sanatorium.

Diphtheria.—The presence of diphtheria in Memphis caused the city board of education, through Superintendent A. A. Kincannon, to close all the white public grammar schools in the city, October 14, until further notice. The Central High School and the Vocational School were not affected by the order. There was no diphtheria among the negroes. It is said that this order was not made on account of the fear on the part of the authorities that the disease would spread, but because the parents of schoolchildren were becoming "panicky" and the attendance at many of the schools had fallen off remarkably. The regular attendance at the Gordon school is 400; October 13, it had fallen to 100. The disease has not been severe and there were few fatalities. Dr. James L. Andrews, on behalf of the department of health, issued a statement explaining the situation to the citizens.

TEXAS

State Surgeons Meet.—At the annual meeting of the Texas Surgical Society in San Antonio, October 19, the following officers were reelected: president, Dr. James E. Thompson, Galveston; vice presidents, Drs. Joseph H. Reuss, Cuero, and Frank Paschal, San Antonio; secretary, Dr. W. Burton Thorning, Houston; and treasurer, Dr. John B. Smoot, Dallas. Dallas was selected as the next place of meeting.

Higher Entrance Requirements.—A report from the University of Texas, Department of Medicine, says that beginning in 1917, in addition to a four-year high school education, two years of college work, including courses in physics, chemistry, biology, English and either French or German, will be required for admission. This makes fifty medical schools which have adopted for admission the requirement of two years of collegiate work.

Sanatorium Items.—Bids have been asked by the Texas Tuberculosis Sanatorium, Carlsbad, for the construction of two two-story and basement dormitories, a dining hall addition to the present subsistence building with basement, and remodeling of the old building, and a sanitary dairy, all these structures to be of reenforced concrete and fire-proof construction.——Contracts have been awarded for the erection of a solarium at the Tuberculosis Hospital connected with the Bexar County farm.——The Floresville Sanitarium, which is under the management of Drs. John F. and Laura Beckmeyer, San Antonio, was formally dedicated October 28.

WISCONSIN

County Sanatorium Opened.—Muirdale, the new tuberculosis sanatorium for Milwaukee County, with accommodations for 275 patients, was formally dedicated November 14, and three days later was opened to receive patients.

Sterilization Law.—It is reported that ten male inmates of the State Home for the Feebleminded have been sterilizd under the new state law. Operations on the fourteen remaining male inmates of the home will be deferred until the results of the ten operations already performed have been observed.

Rabies.—The head of a cow sent from Norrie, Marathon County, when examined in the state hygienic laboratory, was found to be affected with rabies. This is the first case of rabies found in the state for more than a year. Stringent measures have been advised in the community to prevent the spread of the disease.

Tuberculosis Notes.—The seventh annual meeting of the Wisconsin Antituberculosis Society was held in Milwaukee, November 18 to 20. On the first day a sanatorium conference was held with Dr. Thomas Willett, West Allis, as chairman; on the second day the business meeting and annual dinner occurred, and on the third day there was a nurses' conference.

CANADA

Toronto Base Hospital in Greece.—The University of Toronto Base Hospital, which has been in Alexandria, Egypt, has gone to Saloniki.

Tuberculosis Sunday.—November 14 was Tuberculosis Sunday throughout Ontario, and about 18,000 Ontario clergymen received instructions to preach on the subject.

Sanitary Institutions.—Sanitation is to be an important matter in the various military camps throughout Ontario this winter. Sanitary squads are being organized by the Ontario Board of Health under Dr. John W. S. McCullough, Toronto. Each squad will consist of one commissioned officer, fourteen noncommissioned officers and forty privates.

Personal.—Capt. B. S. Hutcheson has arrived in Toronto to be medical officer for the American regiment being recruited in Toronto for overseas service. All the members of this company are to be American residents in Toronto. They take the oath of allegiance to the king, for a period of six months after the war.——The Hon. Dr. Preston, a member of the Ontario government, is to represent that government at the funeral of Sir Charles Tupper in Halifax.——Dr. J. R. L. Christison, Edmonton, Alta., is visiting in Toronto on his way to Europe to join the R. A. M. C.——Dr. Thomas D. Cumberland, assistant in the Hospital for the Insane, Toronto, is with the R. A. M. C. in Belgium.

Hospital News.—Word has been received by Canada's minister of militia, Sir Sam Hughes, that the new hospital for Canadian soldiers, financed by the Massey-Harris Company, Toronto, located in Chatham House, Ramsgate, will be ready for use shortly.——The Ontario Hospital staff for the new hospital being erected in Orpington, England, will be appointed by Canadian military authorities in England. The appointments will be made from Canadian physicians already in England or on the continent. Some will, however, be nominated by the Ontario government. These appointments are causing some dissatisfaction both among the medical men in the Canadian militia, as well as among those in private life who have volunteered their services. It is reported several of the latter have withdrawn their offer of services on account of the manner in which selections are to be made.——There is said to be considerable of a tangle in connection with wounded soldiers returned to Canada unfit for further service. Lieut.-Col. Marlow of the camp in Toronto with his medical board have been ordered to investigate the matter at Quebec. The other members of the board are Major C. J. Currie and Capts. F. J. Munn and F. N. Hughes.

GENERAL

Child Welfare Exhibits.—The Children's Bureau of the Federal Department of Labor announces that a bulletin has been prepared to serve as a reply to the many inquiries about child welfare exhibits, which may be had in single copies for the asking. To those who are planning a baby show, a children's health conference, or to communities which expect to observe Baby Week next March, the bulletin offers the benefit of expert advice and practical experience. It is full of suggestions for communities of all sizes, but advises that no community undertake a child welfare exhibit without the cooperation of all social agencies of the community. Instances are given of the benefit to communities in the way of increased appropriations, permanent improvements and a combination of social welfare agencies to secure and carry out a program of legislation and welfare work following child welfare exhibits.

New Officers for Southern Physicians.—At the annual meeting of the Southern Medical Association held in Dallas, Tex., November 9 to 11, Atlanta, Ga., was selected as the next place of meeting. Dr. Robert Wilson, Jr., Charleston, S. C., was elected president, and resolutions were adopted recommending that the proportion of medical officers in the regular military establishment of the United States should equal at least seventy-five one hundredths (75/100) of 1 per cent. of the enlisted strength "or such number as the surgeon general deems necessary." The following section officers were elected: medical section—Dr. Khleaber H. Beall, Fort Worth, Tex., chairman; Dr. Frederick C. Moor, Tallahassee, Fla., vice-chairman, and Dr. Thompson Frazer, Asheville, N. C., secretary; surgical section—Dr. John H. Blackburn, Bowling Green, Ky., chairman; Dr. F. Webb Griffith, Asheville, N. C., vice-chairman, and Dr. Lucian A. Andree, New Orleans, secretary; eye, ear, nose and throat section—Dr. J. Williamson Jervey, Greenville, S. C., chairman; Dr. Thomas W. Moore, Huntington, W. Va., vice-chairman, and Dr. William T. Patton, New Orleans, secretary.

Metal Mine Accidents in 1914.—In Kansas, Minnesota, New Jersey, New Mexico, Oregon, South Dakota, Virginia and the Territory of Alaska, during 1914 there was a reduction of more than 20 per cent. in the fatality rate in metal mines. There was a slightly higher injury rate for most of the mining states for the same period, but, it is believed, as set forth in the report of Albert H. Fay, mining engineer of the bureau of mines, that the enactment of workman's compensation laws and the educational campaign conducted by state inspectors, mine operators and the bureau of mines has resulted in the more accurate figures concerning mine accidents and therefore more nearly represents the real hazards of the industry than the reports of former years. The number of fatalities during 1914 was 559 as compared with 683 in 1913. The number of men employed for 1914 was 158,115, while for 1913 it was 191,276. The fatality rate for 1914 was 3.54 per 1,000 employed, as against 3.57 in 1913. There were 5,073 serious injuries which resulted in the loss of time of twenty days or more, as compared with 5,890 for 1913. The serious injury rate for 1914 is 32.08 per 1,000, as compared with 30.79 for 1913. There were 25,143 slight injuries resulting in the loss of less than twenty days in each instance, as compared with 27,081 for 1913, or, 159.02 per 1,000, as compared with 141.58 for the preceding year.

Infant Mortality Conference.—Launching a concerted movement to "save the babies" of the whole United States, the American Association for Study and Prevention of Infant Mortality closed its sixth annual convention November 12. The delegates, who had been in session at the Bellevue-Stratford for three days, adopted a resolution calling on the association's members to cooperate with the Federal Children's Bureau at Washington, and the American Federation of Woman's Clubs in holding "Baby Saving Week" in every city in the country from March 4 to March 11, 1916. Uniform laws in all the states regarding the regulation of child labor and the enforcement of laws requiring all births to be reported within five days, under severe penalty for failure to do so, will be among the aims of the nation-wide campaign. Congress will also be urged to defeat any bills which allow narcotic drugs to be used as constituents of "soothing syrups" and similar "remedies" for children's ailments. The legislation passed in many states, purporting to regulate such "patent medicines," actually exempted from their provisions many deleterious preparations, it was said. The next annual convention of the association will be held in Milwaukee in November, 1916. The following officers were elected: president, Dr. Samuel McClintock Hamill, Philadelphia; vice presidents, Drs. Joseph S. Neff, Philadelphia, and Dr. Thomas C. McCleave, Berkeley, Cal.; secretary, Dr. Philip Van Ingen, New York; treasurer, Austin McLanahan, Baltimore, and executive secretary, Miss Gertrude B. Knipp, Baltimore.

FOREIGN

Annual Meeting of the Organized Profession in Ecuador.—The first Congreso Medico-Ecuatoriano was held last month at Guayaquil with a large and representative assemblage. Numerous communications were read and public health matters discussed, the time proving all too short for all the papers that had been presented and surgical demonstrations planned. The closing banquet was a brilliant and cordial conclusion to the meeting.

Monument to Carrion.—August 27, the thirtieth anniversary of Daniel R. Carrion's inoculation of himself with Peruvian verruga, a bronze memorial plate was unveiled to his memory. The memorial is in the general hospital at Lima, Peru, and was erected by the medical staff of the hospital where Carrion, a medical student, made his experiment, the "Hospital Dos de Mayo." The *Cronica Medica* mentions that his aged mother was present. The same issue gives a Spanish translation of the report on verruga and Oroya fever published by Strong, Tyzzer and Sellards in THE JOURNAL, March 6, 1915. Young Carrion's experiment resulted fatally and the scientific results were not conclusive.

Deaths in the Profession Abroad.—E. Jeger, known for his experimental work on surgery of the vessels and for the surgical articles he despatched by aviator post during the siege of Przemysl, was taken prisoner by the Russians and died recently in captivity.——F. M. Oberländer, one of the leading urologists of Germany, aged 67. He was one of the founders and editors of the *Klinisches Handbuch der Harn- und Sexualorgane*, and of the *Centralblatt* for the same specialty, and the *Monatsschrift für Urologie*.——E. Ludwig, professor emeritus of applied medical chemistry at the University of Vienna, aged 73, author of several textbooks on medical and pharmaceutical chemistry. His contributions to chemistry were numerous, principally in the line of analysis. He served as president of the national public health service and was a member of the upper house.

WAR NOTES

Exportation of Medical Publications Forbidden.—The *Allg. med. Central-Zeitung* relates that the publishers of medical works and periodicals in the Marken states of Germany have been notified that the military authorities cannot consent further to medical works being sent to the enemies' countries

if the works contain anything that might help the enemy in conducting the war. The publishers are asked to confer with the medical branch of the war department in case of doubt. Brandenburg, including Berlin, is one of the marches.

Alternating Service of the Medical Force with the French Army.—A Paris exchange states that the government has made arrangements by which physicians wearied by fifteen months' service with the active army can yield their places to others now in the home zone. Among the 8,000 with the army, 1,500 have expressed a desire to be relieved of this service, but there are only 600 available among those who have not already gone to the front. The exchanges are made very gradually so as not to interfere with the workings of the service.

Visit of Inspection to Camps of Prisoners in Austria.—The officers of the international committee of the Red Cross, which has its headquarters at Geneva, recently visited Vienna to inspect the camps of prisoners of war and of interned civilians. The party included the president, Ador, Dr. Ferrière and Dr. Schulthess-Rechberg. They visited the camps at Ralzenau, Lengbach, Wieselburg and Mauthausen, and the Vienna information bureau for prisoners of war, and also the various activities of the Austrian Red Cross, which facilitated their mission in every way.

Bathing Facilities for the Soldiers on the Firing Line.—The bath trains and similar arrangements for bathing require a track or good roads, and hence cannot be utilized by the soldiers at the farthest front. To remedy this, the Austrian Red Cross has provided a bathing outfit which is contained in two wooden boxes that can be carried in any vehicle. Three hundred such outfits have been despatched to the extreme front and are proving very satisfactory. The outfit was devised by Dr. J. v. Winter, and is adapted for field hospitals and for disinfection purposes.

The Medical Profession of France and the War.—A complete list of all French physicians and surgeons who have been killed, wounded or taken prisoner in the war to date has been issued at Paris by the Société d' anatomie comparée. It is called the "Livre d' or de la grande famille médicale." and contains also the names of all who have been honored in any way for conspicuous gallantry, with the details, both for army and navy medical officers and civilian physicians and surgeons, veterinarians and pharmacists. The price of the work is 2 francs. It is published by Maloine, 25 rue de l'Ecole de Médecine, Paris, the proceeds, we understand, to go to the relief fund for members of the profession during the war.

PARIS LETTER

PARIS, Oct. 21, 1915.

The War

ROTATION IN SERVICE AT THE FRONT

Many physicians who have been at the front since the outbreak of the war have complained of the injustice in the fact that many other physicians have continued to be stationed at a distance from the front. In a previous letter (THE JOURNAL, Sept. 4, 1915, p. 891) I mentioned an article by M. André Maginot which voiced some of these complaints. The undersecretary for the military medical service has therefore given instructions that, in each regional division, a system of rotation in service shall be established, and each physician shall declare, within the forty-eight hours following the receipt of the order for his departure, if he is unfit for active service in the field. There are, however, regimental physicians who are entirely willing to remain at the front if necessary. They ask why such relief should apply solely to physicians and not to officers as well.

THE MEDICOSURGICAL STATISTICS OF THE WAR

I mentioned in a previous letter (THE JOURNAL, May 15, 1915, p. 1671) the character of the medicosurgical statistics of the war that had been decided on by the minister of war. Certain journals have been ridiculing the idea of such statistics, and Dr. Jacques Bertillon, formerly head of the bureau of municipal statistics of the city of Paris, has come to its defense. He mentions that the military surgeon Chenu compiled medicosurgical statistics on the Crimean and Italian wars which marked an epoch in the history of the science. In particular, conservative surgery, today triumphant, drew from Chenu's statistics the first arguments for its defense; these proved that at this time useless or even harmful amputations were too often made, and that depriving the patient of a limb too often endangers instead of saving his life. How many times has there not been occasion to regret that no such researches were made in 1870-71!

PROHIBITION OF DELIVERY OF ROENTGENOGRAMS TO THE WOUNDED

The attention of the minister of war has been called to the serious disadvantages resulting from the delivery of tracings or roentgenograms to soldiers who have sustained wounds of war. These pictures, which are scrupulously preserved by the wounded, often give rise to functional incapacities, suggested to the patients by the presence of a foreign body. The minister has therefore given instructions that roentgenograms, etc., as well as the case records, shall never be turned over to the patients on their successive discharges from the various hospitals, but shall be transmitted under seal from one hospital to the other, being preserved in the last hospital where the patients have been treated, or finally transmitted to the administrative office of the regional medical service, where they may be consulted whenever it is desirable.

The minister, moreover, reminds the roentgenographers that they are not to perform roentgenoscopy on the men who have been sent back to their military duties after cure, such examinations being reserved for patients under treatment.

EXAMINATION OF THE URINE OF SOLDIERS PRESENTING PICRIC ACID JAUNDICE

At the Réunion médico-chirurgicale de la X-e armée Dr. Launoy, speaking on the same subject, recommended that the test be performed, not on the urine itself, but on a concentrated and carefully purified urinary extract. The reaction of the strip of wool (THE JOURNAL, Sept. 25, 1915, p. 1124) ought to be considered positive only when the coloration obtained resists the decolorizing action of a 1:9 solution of liquor potassae chlorinatae. When possible, the reactions of the urine should be controlled by the character and reactions of the blood serum.

SERUMS FOR THE USE OF CIVILIAN PHYSICIANS

The attention of the minister of the interior was called to the serious inconvenience which the civilian population suffers through the fact that civilian physicians cannot procure serums which are indispensable for the practice of their profession. He replied that civilian physicians may procure antidiphtheric, antitetanic, antimeningococcus and antidysenteric serums directly from the Pasteur institute. The only reservation is, in the case of the last three, that the needs of the army must first be supplied. The supplies of the same serums, moreover, are as much as possible put at the disposal of the prefects for use in charity work. In urgent cases, serum may be supplied to physicians who need it immediately for their private practice.

GENERAL INSPECTION OF THE HYGIENE OF THE ARMY

A general inspection of the hygienic condition of the troops stationed in the interior has just been ordered for the duration of the war. Dr. Vaillard, medical inspector general of the military medical service, is to have charge of this inspection, and is to be responsible directly to the minister of war. His jurisdiction is defined by the assistant secretary for the military medical service as covering the study and examination on the spot of matters relating to the hygiene and material conditions of the life of the troops, their sanitary condition and the measures necessary to prevent or check the development of epidemics either among the soldiers or among the civil population.

THE DIFFICULTY OF OBTAINING ALCOHOL FOR PHARMACEUTICAL USE

Alcohol has been requisitioned for the manufacture of powder. To obtain the alcohol necessary for their work, therefore, pharmacists each month have to address a request to the Office des produits chimiques et pharmaceutiques (THE JOURNAL, Nov. 14, 1914, p. 1775). This alcohol is exclusively for use in filling prescriptions and preparing medicines, and is not to be sold as such. Pharmacists are to ask for no more than the carefully calculated monthly needs of their laboratories. The Office des produits chimiques et pharmaceutiques issues vouchers by means of which pharmacists may procure alcohol, either directly or through their regular dealer, from the distillery indicated on the voucher. The alcohol is furnished by the distillery at the price of requisition, which is now about 100 francs (about $20) per hectoliter (about 26 gallons) at the producers. The Office

des produits chimiques et pharmaceutiques accedes to demands of pharmacists and manufacturers of pharmaceutical products employing not more than 3 hectoliters a month; it cannot comply with demands for larger quantities.

BERLIN LETTER

BERLIN, Oct. 20, 1915.

Personal

Prof. Ferdinand Götz, sanitary expert and director of the German system of physical exercise, died in Leipzig, October 13 at the age of 88 years. Early in his career he became interested in gymnastics and shortly after arriving in Leipzig in 1855, he was instrumental in organizing several turner or gymnastic societies. He also assumed the editorship of a number of journals devoted to gymnastics. He was the author of several books on gymnastics and for many years was chairman of the Association of German Turner Societies. His eighty-fifth birthday was celebrated by all the German turner societies, and an honorary Ph.D. was conferred on him by the university of Kiel.

Professor Sklarek, for many years publisher of the *Naturwissenschaftliche Rundschau*, died in Berlin, October 10, at the age of 80. He has been given the credit of having brought the progress made in the natural sciences and medicine before the public in a popular manner by means of lectures delivered before the Berlin Workers Society and by editorials in the daily press as well as in the journals he edited. In 1868 he published a work on the care of the health. He was also one of the founders of the Berlin Meteorological and Physiological Society.

Professor Boveri, ordinary professor of zoology and comparative anatomy, died in Würzburg October 16 at the age of 53 years. He became lecturer at the university of Munich in 1888. In 1893 he was appointed ordinary professor of zoology and comparative anatomy, succeeding Professor Semper, and director of the zoologic institute in Würzburg. He remained loyal to this institution, refusing the call to Freiburg in 1912 as successor to August Weismann, and also refusing to accept the directorship of the new Kaiser Wilhelm Institute for Biology in Berlin. His work in histology, embryology and comparative anatomy was epoch making. He revolutionized the conception of the tissue cells by discovering the chromosomes (simultaneously with v. Benecken) in the cell nucleus and establishing the important function played by them in cell division. His studies made in connection with these investigations on cells of various forms of animal life were contained in three volumes entitled "Cell Studies" (Jena 1887-1890). His continued research on fertilization and nutrition of the cell placed the study of embryology on an entirely new basis. Much of his work was done on the amphioxus, coral zoophytes and similar animals. In 1909 he published his researches on the determination of sex in the "Physikalischmedizinische Gesellschaft" at Würzburg. One of his most important publications was that setting forth the results of his study of the pathologic anatomy of tumors. In 1914 he published his theory of the development of malignant tumors deduced from his extensive research mainly on the egg of the sea urchin. The basis on which he places the etiology of these malignant growths is a developmental defect of the cell nucleus. His theory did not meet with the approval of well-known pathologists.

Family Life and the Nation

The activities before the beginning of the war directed toward stopping the diminution in the birth rate of Germany have received a tremendous stimulus by the enormous loss of life caused by the war. Shortly after the Franco-Prussian war, the birth rate increased rapidly, reaching the highest point in 1876, namely, 42.6 per thousand. This rate gradually diminished, and in 1913 had fallen to 28.3 per thousand. In Prussia the birth rate in 1899 was 37.5 and in 1913 was 29 per thousand. With regard to the excess of births over deaths, this, too, is changing. In 1895, in Prussia, it was 14 per thousand; in 1913, it was only 13.2. In order to meet the exigencies of the occasion, the newly founded German Society for Bevölkerungspolitik, organized for scientific study of the subject, met recently in Berlin and discussed the question very fully. The presiding officer, Dr. Julius Wolf, in his address directed attention to the Russian statistics showing an increase in population of 3,000,000 to 4,000,000 per year as against 800,000 in Germany. The population of Russia is 180,000,000 as against 68,000,000 in Germany. The difference between the French and German increase is not so great. Previous experience tends to show that there will not be a continuous increase in births after the war. In fact, a large number of cripples and partial invalids and the labor which necessarily must be performed by women will tend to lower the birth rate and do it rapidly, much more so than would otherwise be the case. Dr. Wolf directed attention to every condition bearing on this point, and finally suggested three aims to work for as helps toward the solution of the problem: (1) To exert influence to increase the number of marriages and families with a larger number of children. In Prussia the average age of men when they marry is twenty-nine years, which means that for at least ten years they have been exposed to venereal infection with the resulting possibility of sterility. To combat this, he urged a reform in the present methods of training men for trades, so that they might begin to earn more money earlier. Next to be considered, he said, were the questions of furnishing living places, motherhood premiums, and here the experiences made in Australia would be of great value. The money, he thought, could be provided by taxation, the single man carrying the load, the man of family contributing but little, instead of the present per capita system. The workman can hardly be expected to have a large family unless he is assisted financially; the community would have to assume the burden. The third child is liable to upset the family budget; the fourth child brings the wolf to the door. The community must share this burden of care.

(2) Success in the campaign against venereal diseases would increase the number of births by 100,000 and more. Infant mortality must also be lowered. The infant mortality of Germany is now 15 to 100 born living; in Norway, it is 7 and in Australia only 5 per cent. Infant mortality is highest in Bavaria. Augsburg shows 21 deaths among infants as against 15 in Berlin and 11 in the Hanse towns. "And certainly," Wolf exclaimed, "the constitution of the Berlin and Hamburg child is no better than that of the Bavarian child." . . . "Pediatrists to the front!"

(3) Emigration to new territory offers another solution which should be considered as a means of furnishing facilities for better means of living and increased incomes.

LONDON LETTER

LONDON, Oct. 29, 1915.

The War

THE TOTAL BRITISH CASUALTIES NOW HALF A MILLION

The total British casualties up to October 9 have just been published. In the western area, that is, France and Belgium, 4,401 officers and 60,059 men have been killed, and 9,169 officers and 225,716 men have been wounded; 1,567 officers and 61,134 men are missing; the greater number of the latter are probably killed. This makes the total casualties 362,046 in the western area. In all fields of operation, 6,660 officers and 94,992 men have been killed; 12,633 officers and 304,832 men have been wounded, and 2,000 officers and 72,177 men are missing. The total British casualties, therefore, were 493,294. At the time of writing, they must have reached half a million.

CHILD LIFE AND THE NATION

The great loss of life in the war has stimulated the recent movement to promote the welfare of motherhood and infancy. A meeting organized by the "Central Economic Guild" of the "Central Committee for the National Patriotic Organization" has been held to inaugurate a campaign with the object of coordinating all the efforts in this direction on national lines. Representatives of the government and prominent philanthropists and physicians were present. Mr. Herbert Samuel, the postmaster general, said that the nations of Europe were engaged in the destruction of life on the most colossal scale known to history. Ready to our hands and obvious was the remedy, so far as this country was concerned, to make good the loss. Much of the mortality among infants was not inevitable, and in addition they must consider antenatal mortality. The saving of these lives was one of the few questions in which the government and the legislature were ahead of the nation. The majority of local authorities showed little activity. Public opinion should be made more vocal. Pressure should be brought to bear on lethargic local authorities, and a greater number of men and women who have the time should throw themselves wholeheartedly into the work of the health associations and other organizations engaged in this movement.

Sir James Crichton-Browne said that up to the present we had irreparably lost at least 150,000 of the flower of our man-

hood, and this waste of human treasure imposed on us the obligation to practice the strictest economy in human life. It was disconcerting to find that the supply of infants was falling off. Having regard to the vital importance to the economic future of the country of copious reinforcement of infant life, attention should be given to the neomalthusian propaganda, which was largely cutting off these reinforcements. Referring to the effect of the industrial occupation of women on prenatal mortality and on the health of the infant, Sir James said that now that we had a larger number of women than ever before engaged in industrial pursuits, we must give them the benefit of the best antenatal hygiene. We wanted, not puny, atrophied, debilitated brats, but promising little pink buds of humanity. That much of the mortality among infants could be prevented was beyond question. Doctors' babies died at the rate of only 40 per thousand in the first year because doctors knew how to look after them, whereas those of miners who did not know how to look after them died at the rate of 160. In conclusion, Sir James suggested that further investigation into antenatal pathology should be made, and that for this purpose stillbirths should be registered and centers of scientific research established.

An American Nostrum in Australia

William W. Dobson, the agent in Western Australia for Radam's Microbe Killer, has been charged at Fremantle with having published a statement in connection with this nostrum which was false. He admitted the offense and pleaded for a light penalty on the ground that he was merely a subagent, and was not responsible for the wording of the pamphlet. The prosecution was based on the fact that Radam's Microbe Killer was vaunted as a cure-all; the venders claimed that it was perfectly safe, and contained no acids. The health department has purchased four bottles at the cost of $5, and it was found that it contained 0.5 per cent. of sulphurous or sulphuric acid, and 99.5 per cent. of water. It was therefore stated that Radam's Microbe Killer was a fraud. It appears that this fluid was manufactured in America, and had proved a failure. Later it reappeared under another name until its importation was prohibited by the commonwealth authority. The proprietor next attempted to import the "Microbe Killer" into the commonwealth, but the federal authority prohibited it as well. The firm thereupon started concocting the "Microbe Killer" in the eastern states. In order to show how serious the result of the false statement in the pamphlet might be, the prosecution announced its intention of calling expert medical evidence. The defendant objected to this on the ground that he had pleaded guilty. The objection was upheld, and the prosecution was therefore prevented from bringing corroboration of the statement that the claims of the venders were untenable. In the end, Dobson was fined $25, with $28 costs.

Marriages

WALTER CHARLES AUGUST STEFFENS, M.D., College Point, N. Y., to Miss Catherine MacDougal of Burlington, Vt., in New York City, October 30.

LIEUT. HENRY L. DAVID, M. R. C., U. S. Army, Fort Terry, N. Y., to Miss Mary A. Story of Canaan, N. H., at New London, Conn., October 14.

JAMES A. RAMSEY, M.D., Arlington, Texas, to Mrs. Fletcher J. Lively of Prineville, Ore., at Fort Worth, Texas, recently.

HARRY ALOYSIUS BISHOP, M.D., Washington, D. C., to Miss Roberta Morgan at Fort H. G. Wright, N. Y., October 6.

RAYMOND CANFIELD DODD, M.D., Glen Ridge, N. J., to Miss Edna Houston Jones of Bloomfield, N. J., October 12.

LOWELL MASON CAMPBELL, M.D., Minneapolis, Minn., to Miss Elda Bishop of Dodgeville, Wis., November 3.

WILLIAM SWEENY STUCKY, M.D., to Miss Anne Clay McDowell, both of Lexington, Ky., November 15.

JOHN IRA SPOONER, M.D., to Miss Annette Beneta Folmar, both of Donalsonville, Ga., November 2.

GEORGE CARROLL SMITH, M.D., St. Louis, to Miss Margaret Clare Shirley of Chicago, November 6.

CONSTANTINE THEODORE, M.D., to Miss Marion Cronin, both of Chicago, November 6.

JOHN GEORGE WILLIAMS, M.D., to Miss Angela Sause, both of Brooklyn, November 3.

Deaths

Edward Livingston Trudeau, M.D. College of Physicians and Surgeons in the City of New York, 1871; a pioneer in the fresh air treatment of tuberculosis; died at his home in Saranac Lake, N. Y., November 15, aged 67.

Dr. Trudeau was born in New York, Oct. 5, 1848, the son of Dr. James and Cephise (Berger) Trudeau. A year after his graduation in medicine he began practice in New York City, but on account of tuberculosis of the lungs was forced to leave his work. He decided to go to the Adirondacks, and established a home at Saranac Lake. His belief in the efficacy of fresh air in the treatment of incipient tuberculosis worked so well in his own case, that in 1884 he founded the Adirondack Cottage Sanatorium for the Treatment of Incipient Tuberculosis in Working Men and Women, the first institution of its kind to be established in the United States.

The theories of Dr. Trudeau there first put in practice are now acknowledged the world over, and the best testimonial to the worth of the treatment is the immense number of those who have graduated, cured, from the institution. Ten years after he founded the Adirondack Cottage Sanatorium Dr. Trudeau established the Saranac Laboratory for the Study of Tuberculosis, the first research laboratory on this subject to be established in the United States. He continued in charge of both of these institutions until his death.

Dr. Trudeau was given the honorary degree of M.Sc. by Columbia University in 1899, and the degree of LL.D. by McGill University, Montreal, in 1904, and nine years later by the University of Pennsylvania. In addition to his fellowship in the American Medical Association and New York Academy of Medicine, Dr. Trudeau was a member of the Association of Pathologists and Bacteriologists, the Association of American Physicians and the American Climatological Association. He was the first president of the National Association for the Study and Prevention of Tuberculosis. In 1908, a "Festschrift" containing contributions on tuberculosis by his co-workers in the Saranac Laboratory was dedicated to him in honor of his sixtieth birthday.

He was widely known throughout the country, not only on account of the plucky fight which he made for more than forty years against tuberculosis, but because of his prolific contributions to the literature of the subject. His last illness began with an attack of pneumonia at Paul Smith's in the Adirondacks about two months ago.

Christian Berry Stemen, M.D. Medical College of Ohio, Cincinnati, 1875; aged 75; a Fellow of the American Medical Association; for a quarter of a century chief surgeon of the Pennsylvania System at Fort Wayne; dean of the Fort Wayne College of Medicine and for many terms a member of the board of regents of the University of Indiana; once president of Taylor University and for two years professor of surgery in the University of Kansas; one of the most prominent and esteemed surgeons of the Middle West; died at his home in Fort Wayne, Ind., November 13.

George F. Chittenden, M.D. University of Louisville, Ky., 1855; aged 84; assistant surgeon of the Sixteenth Indiana Volunteer Infantry and later medical director of General A. J. Smith's Division of the Thirteenth Army Corps, and medical director of Camp Morton, Indianapolis, after his resignation from the service; representative from Madison and Henry counties in 1868 and a commissioner of the State Hospital for the Insane five years later; died at the home of his daughter in Anderson, Ind., October 31.

Perry Jaffa, M.D. Gross Medical College, Denver, 1900; aged 45; a Fellow of the American Medical Association and formerly vice president of the Colorado State Medical Society and secretary of the Las Animas County Medical Society; city physician, health officer and secretary of the Board of Health of Trinidad, Colo.; local surgeon of the Colorado and Wyoming Railroad and Colorado Fuel and Iron Company; died at the home of his brother in Denver, November 2, from heart disease.

Hermann E. Hasse, M.D. University of Würzburg, Germany, 1861; aged 79; major and surgeon of the Twenty-Fourth Wisconsin Volunteer Infantry during the Civil War; an authority on botanical subjects and especially lichens; the author of a monograph on the Lichens of Southern California, published by the Smithsonian Institute; for seventeen years chief surgeon of the Soldiers' Home, Santa Monica, Calif.; died at his home in that city, October 30.

Joseph P. LeFevre, M.D. University of California, San Francisco, 1881; aged 60; formerly a Fellow of the American Medical Association and superintendent of the San Francisco City and County Hospital; local surgeon at Venice, Calif., for the Pacific Electric Company; who was seriously injured in a collision between his automobile and an electric train near Venice; died from his injuries, October 30.

Raymond Claude Fout, M.D. University of Maryland, Baltimore, 1901; aged 37; of Kemptown, Md.; formerly a member of the Medical and Chirurgical Faculty of Maryland; president of the Mount Airy People's Lumber and Supply Company; died in the Baltimore Eye, Ear and Throat Charity Hospital, November 2, from posttonsillar abscess for which operation was being performed.

Sigmund Tynberg, M.D. College of Physicians and Surgeons in the City of New York, 1885; aged 51; a Fellow of the American Medical Association; for several years a member of the staff of the City Hospital, Blackwell's Island, N. Y., and president of the medical board of that institution; died in St. Luke's Hospital, New York City, November 3, from arteriosclerosis.

Francis M. Perkins, M.D. Indiana University School of Medicine, Indianapolis, 1911; aged 26; a member of the Indiana State Medical Association; a well-known practitioner of Pennville and Kendallville, Ind.; captain of Company B, Third Infantry, Ind. N. G.; died in Swan, Ind., November 1, from injuries received in the overturning of his automobile.

Myra Wheeler Knox, M.D. Cooper Medical College, San Francisco, 1884; aged 62; formerly a member of the Medical Society of the State of California; for twelve years a member of the Oakland (Calif.) Board of Education; physician to the State Home for the Blind; died in the Merritt Hospital, Oakland, October 31, from cerebral hemorrhage.

George Richard Montgomery Kuhn, M.D. Long Island College Hospital, Brooklyn, 1872; aged 68; a member of the Medical Society of the State of New York; pathologist, physician, secretary and once president of the staff of St. Mary's Hospital, Brooklyn; also a graduate in pharmacy; died at his home in Brooklyn, November 5, from cerebral hemorrhage.

William Hill Neel, M.D. University of Nashville, Tenn., 1860; aged 79; surgeon of the Twenty-Fourth Tennessee Infantry, C. S. A., during the Civil War; for twenty-two years a practitioner of Sumner County, Tenn., but since that time a resident of Mayfield, Kan.; died at his home in Mayfield, October 21, from cerebral hemorrhage.

Frank Herbert Daniels, M.D. Harvard Medical School, 1884; aged 59; a Fellow of the American Medical Association and vice president of the American Jurisprudence Society; for many years visiting physician to the J. Hood Wright Hospital, New York City; died at his home in New York, October 30, from heart disease.

Harry W. Barber, M.D. University of Vermont, Burlington, 1906; aged 35; a Fellow of the American Medical Association; anesthetist and assistant surgeon to St. Mary's Hospital, Rochester, N. Y.; one of the most promising young surgeons of Rochester; died at his home, November 2, from angina pectoris.

William M. Bartley, M.D. Baltimore Medical College, 1895; aged 46; a Fellow of the American Medical Association and one of the most prominent practitioners of North Dakota; coroner of Eddy County and a member of the legislature; died at his home in Sheyenne, November 6, from diabetes.

John B. McDill, M.D. Medical College of Ohio, Cincinnati, 1859; aged 81; formerly of Camp Grove, Ill.; assistant surgeon of the Sixty-Seventh Ohio Volunteer Infantry during the Civil War; died in the National Military Home, Danville, Ill., October 9, from arteriosclerosis.

George Andrews Hood (license, years of practice, North Carolina, 1895), aged 44; vice president of the Parrish-Godwin Company, Benson, N. C.; for many years a practitioner and druggist of Kenly, N. C.; died at his home, October 30, from rheumatism.

Patrick V. Dolan, M.D. Georgetown University, Washington, D. C., 1890; aged 56; for thirty years a law clerk in the Treasury Department, Washington; died in St. Vincent's Hospital, Norfolk, Va., October 30, from shock following the amputation of his leg.

Robert Luther Willis, M.D. Bellevue Hospital Medical College, 1875; aged 68; formerly superintendent of the Eastern Kentucky State Hospital, Lexington, Ky.; died in his office in Lexington, November 6, from cerebral hemorrhage.

Alonzo Cooper Kellogg, M.D. Bellevue Hospital Medical College, 1887; aged 70; a practitioner of Portage, Wis., for forty-five years; for nearly twenty years superintendent of schools of Portage; died at his home in that city, October 31, from cerebral hemorrhage.

James M. Bradbury, M.D. Washington University, St. Louis, 1869; aged 76; of Coaldale, Colo.; a veteran of the Civil War; for many years a practitioner of Canon City, Colo.; died in the Red Cross Hospital, Salida, Colo., October 27, from pneumonia.

Henry Johnson, M.D. University of Michigan, Ann Arbor, 1867; aged 79; formerly a Fellow of the American Medical Association; surgeon of the Sixth Michigan Volunteer Cavalry during the Civil War; died at his home in Caseville, Mich., October 17.

Charles Shannon Butts, M.D. New York University, New York City, 1889; aged 43; a member of the Medical Society of Virginia and an esteemed practitioner of Newport News, Va.; died in a hospital in Oklahoma City, October 6, from typhoid fever.

John J. Youtsey, M.D. Northwestern University, Chicago, 1876; aged 75; for fifty-one years a resident of northern Colorado; and a pioneer practitioner of Larimer County; died at his home in Loveland, Colo., October 13, from acute gastritis.

Solomon Henry Secoy, M.D. Medical University of Ohio, Cincinnati, 1888; aged 74; a veteran of the Civil War; a practitioner for forty-five years; died at the home of his daughter in Jeffersonville, Ind., October 31, from cerebral hemorrhage.

William Wallace Chisholm, M.D. Hahnemann Medical College, Philadelphia, 1915; aged 21; an intern in the Hahnemann Medical College, Philadelphia; died in that institution, October 29, from septicemia.

Eugene A. Grove, M.D. University of Pennsylvania, Philadelphia, 1870; aged 65; for twenty-five years a practitioner of Carlisle, Pa.; died at his home in that place, October 23, from cerebral hemorrhage.

William Henry Scott, M.D. Berkshire Medical College, Pittsfield, Mass., 1862; aged 83; for more than half a century a practitioner of Manhattan and Brooklyn; died at his home in Brooklyn, October 27.

Samuel Watson Bragg, M.D. University of Vermont, Burlington, 1879; aged 55; a practitioner and druggist of Lincoln, Me., died at his home in that place, August 9, from cerebral hemorrhage.

Louis A. Monmonier, M.D. University of Maryland, Baltimore, 1864; aged 71; of Waverly, Baltimore; died at the home of his niece in Baltimore, October 26, from cerebral hemorrhage.

Eugene V. Chase (license, Michigan), aged 82; a member of the State Legislature of Michigan from 1877 to 1880; died at his home in Elsie, Mich., September 26, from intestinal obstruction.

James W. Kirkwood, M.D. University of Louisville, Ky., 1873; aged 64; of Wichita, Kan.; formerly a member of the staff of the Wichita Hospital; died suddenly in Wharton, Texas.

Frederick H. Flynn, M.D. College of Physicians and Surgeons, San Francisco, 1912; aged 35; died in Los Angeles, August 27, from asphyxiation believed to have been suicidal.

Benjamin H. Chedeck, M.D. Minneapolis College of Physicians and Surgeons, 1903; aged 36; of Omaha; died in Somers, Wis., August 16, from cerebral meningitis.

D. R. Blair (license, Texas, years of practice, 1907), aged about 50; of Denison, Texas; died in Sherman, Texas, about August 25, it is said from drug addiction.

Harvey N. Abbott, M.D. University of Pennsylvania, Philadelphia, 1878; aged 59; died at his home in Philadelphia, October 25, from cerebral hemorrhage.

Augustus W. Crow, M.D. College of Physicians and Surgeons, Baltimore, 1875; aged 64; died at his home in Livia, Ky., July 18, from tuberculosis.

J. M. Saunders, M.D. Medical College of Georgia, Augusta, 1853; aged 89; died at his home in Winder, Ga., September 26, from nephritis.

Joseph Lawson Porter, M.D. Rush Medical College, 1881; aged 61; died at his home in Paola, Kan., September 10, from pernicious anemia.

James K. P. Idol, M.D. Washington University, St. Louis, 1872; died at the home of his daughter in Alden, Kan., October 22.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

FRAUDULENT MEDICAL INSTITUTES IN NEW YORK

The State Department of Labor of New York, in connection with the Bureau of Industries and Immigration, has been making an investigation of some of the fraudulent "medical institutes" in New York City. A report issued by the department contains a brief account of what has been accomplished in the protection of immigrants and aliens who have been made the especial prey of these frauds. A description is given of the methods of these medical fakers. They open sumptuous offices under high-sounding names and place advertisements in the foreign-language press. They also distribute circulars, in all languages, throughout the immigrant section of the city of New York, calling attention to the wonders of the "institute." These circulars and advertisements are so worded as to give the impression that the institute is a charitable organization with advice and consultation "absolutely free"—a charge being made for medicine only. What happens to a person who consults the swindlers who run these institutes is thus described in the report:

"The applicant is ushered into a private office. To comply with the law a registered physician, under whose name the 'institute' operates and who is very often only an instrument in the employ of an unregistered financial backer, in addition to two or three interpreters, all representing themselves as physicians, take the patient in hand. He is placed before a large machine of complex appearance that conveys the impression to the ignorant immigrant of being costly and almost miraculous, and is examined by the two or more interpreters, who dramatically and with apparent emotion inform the patient that he is suffering from some dreadful disease, which if longer neglected, will result in death. The patient becomes alarmed and agrees to pay any price for a cure, which is guaranteed. A large sum is at first requested as part payment, but any amount that the patient has or can obtain is accepted. It is unnecessary to state that the so-called examination and later 'treatment' are absolutely without merit, and that unregistered assistants are acting as physicians and 'treating' the patient. No prescriptions are given, as the so-called 'institute' provides all medicines and medicinal appliances."

The report also describes the "wax museum" method of roping in the unsuspecting immigrant. It is said, also, that some of these "institutes" and "museums" publish newspapers and books that are extensively distributed, describing the marvelous cures accomplished.

"It is not uncommon for these 'physicians' to resort to forgery, trickery or any other device in order to obtain the savings of their unfortunate victims. They have been known to take bank books and withdraw entire deposits on such orders. Persons convicted in various states for similar practices are now operating in New York City."

One of the so-called "professors," in one of these institutes, who was not a registered physician, confessed to a representative of the bureau that before examination patients are asked to undress in an anteroom where their clothes are searched for bank books, money, etc., to enable the fakers to estimate the size of the fee they shall demand. The victims are invariably told that they are suffering from some dangerous ailment, and the report cites instances in which the victims who had been robbed of all their money were found by reputable physicians to be suffering from no disease at all. Details of a number of such instances are given in which the representatives of the bureau were enabled to recover large sums of money from these fakers. Although it is expensive and troublesome, the bureau has been able to secure evidence in many instances against these fraudulent institutes. It is estimated that thousands of people, especially immigrants, are daily victims of these leeches. One "institute," which was compelled to disband through the efforts of the bureau, had an enrolment of about 14,000 patients.

SOME MISCELLANEOUS NOSTRUMS FOR EXTERNAL APPLICATION

HILL'S FRECKLE LOTION

"Hill's Freckle Lotion" is said to be put on the market by J. V. Hill, Providence, R. I. The state chemists in the Report of the Connecticut Agricultural Station state that analysis showed the preparation to be a solution of corrosive sublimate and water in the strength of 1.84 per cent. bichlorid of mercury. According to the same report, the following claims were made for this product:

". . . is absolutely harmless when used externally according to directions."

"Removes moth, tan, freckles, pimples, ringworms and all eruptions of the skin."

As the Connecticut chemists say, Hill's Freckle Lotion "is an extremely dangerous preparation."

KINGSBERY'S FRECKLE LOTION

"Kingsbery's Freckle Lotion (1st. strength)" is said to be put on the market by E. W. Kingsbery, Randolph, Mass. According to the Report of the Connecticut Agricultural Experiment Station, 1914, the following claims have been made for this product:

"Will positively remove freckles, tan, moth patches, etc., from the face, hands and arms without the slightest injury to the most sensitive skin."

"Unequalled for use in ivy and dogwood poison, insect bites and stings, salt rheum, eczema and all skin irritations, stopping the itching immediately and counteracting the poison."

Kingsbery's Freckle Lotion was analyzed by the state chemists of Connecticut who reported that it, like "Hill's Freckle Lotion," is a solution of bichlorid of mercury in water, containing 5.3 parts of the corrosive sublimate to 1,000 parts of water. As the Connecticut officials state this "is an exceedingly dangerous remedy to use." The use of the poisonous salts of mercury, even externally, is fraught with danger. There are numerous cases on record of poisoning from the external application of mercurial compounds. Taylor quotes a case of two brothers who died from the effects of absorbing corrosive sublimate through the unbroken skin. Death has followed the absorption of corrosive sublimate in dilutions of 1 to 1,000 and 1 to 2,000.

KULUX COMPOUND

Kulux Compound is sold by the Kulux Manufacturing Company, Rochester, N. Y., a concern that is apparently another of the numerous schemes emanating from the fertile brains that have conceived and executed many mail-order frauds. Our readers will call to mind such companies as the fraudulent "New York Institute of Science," the equally fraudulent "Cartilage Company," to say nothing of the "Okola Laboratory" swindle, the "Dr. Turner Obesity Cure" and a number of other concerns of similar type. Kulux Compound has been advertised on the "prescription fake" method under such claims as the following:

"Makes the skin transparent and removes all defects such as freckles, tan, sun-spots, roughness and ruddiness."

"Blemishes of every kind disappear as if by magic."

"This is the private prescription of a famous Parisian beauty."

The alleged "prescription" calls for a "1 ounce bottle of Kulux Compound" which is to be added to a mixture of water and witch hazel. Kulux Compound has been reported on by several state chemists. The following, taken from the "Medical Frauds" bulletin issued by the Indiana State Board of Health may be taken as typical:

Zinc oxid	7 per cent.
Bismuth subcarbonate	5 per cent.
Glycerin	10 per cent.
Water	78 per cent.

The Indiana chemists state further that although the retail price of Kulux Compound is 50 cents, the value of the ingredients is 4 cents.

MRS. MCCORRISON'S FAMOUS DIAMOND LOTION NO. 1

According to the report of the Connecticut Agricultural Experiment Station for 1914, Mrs. McCorrison's Famous Diamond Lotion No. 1 is put on the market by E. K. Guenther of Waldoboro, Maine, under the following claims:

"Will remove Moth, Tan, Freckles, Pimples, Blackheads, Salt-Rheum, Eczema and all the various affections of like character."
"It is unlike any other preparation for the skin and complexion."

The Connecticut chemists reported that it was essentially a solution of bichlorid of mercury in the strength of 28.2 parts of the corrosive sublimate to 1,000 of water. The stuff is a dangerous poison.

NEROXIN

Neroxin is another one of the numerous "prescription fake" nostrums put out by the Cooper Pharmacal Company of Chicago. As has been mentioned before, the Cooper concern exploits its frauds in fake "Beauty Departments" under the name "Valeska Suratt." Here, for instance, is a paragraph from an advertisement put in the form of reading matter and supposed to be devoted to "Secrets of Remarkable Formulas Revealed by Valeska Suratt."

"Blackheads will be removed in a few minutes by first washing the face, then sprinkling some neroxin on the sponge, wet with hot water, and rubbing over the blackheads for a few minutes. Then wash the face again. The neroxin can be procured for fifty cents at any drug store."

According to the bulletin on "Medical Frauds" issued by the Indiana State Board of Health, Neroxin contains:

Borax	55 per cent.
Soda	25 per cent.

According to the same authority, Neroxin retails for 50 cents; the value of the ingredients is 3 cents.

OTHINE

Othine is put on the market by a concern calling itself the "Othine Laboratories, Buffalo," which claim to be the "proprietors of Mrs. E. C. White's Famous Prescription, Othine-Double Strength." Othine is sold as a "remover of freckles" and such claims as the following are to be found among the advertising:

"Othine is altogether unlike the old-fashioned skin remedies, complexion bleaches, lotions, etc., which irritate the skin beyond endurance."
"It is absolutely harmless to the most delicate complexion. . . ."
"If it contained a single injurious ingredient I certainly would not put it on my face."

Othine can be purchased at the drug stores—$2 for a 2½-ounce jar. Those who have written to the "Othine Laboratories" for information, have received a series of circular letters signed "Mrs. E. C. White." In the first letter the correspondent was told:

"It requires at least a box of Othine to remove freckles. Samples would be too small to accomplish anything, therefore, I do not send them; so please do not write me for samples. The full treatment of Othine will be sent you in a plain wrapper, charges prepaid on receipt of $2.00."

Some time later—the $2 not having been sent—another letter came from the "Othine Laboratories" offering the 2½-ounce jar of Othine for $1. This offer also was ignored and in due time a third letter came in which the offer was made that a 1-ounce package of Othine would be sent for 50 cents!

Othine has been reported on by the state chemists of Connecticut, Indiana and Kansas. The reports all agree in essentials. According to the Connecticut chemists, Othine contains 7.7 per cent. bismuth subnitrate and 11.5 per cent. ammoniated mercury with a fatty base. Ammoniated mercury is a powerful caustic poison and it is little less than criminal that a product containing it should be sold under the claim that it is "absolutely harmless to the most delicate complexion."

Correspondence

An Important Rule for the Operating Room

To the Editor:—Never allow any relatives or friends of the patient to be present at a painful operation; nor at one requiring a general anesthetic. I adopted this rule twenty-five years ago, and its advantages have been so manifest that I cannot understand why it is not universally followed. So far as I know, it has cost me only one patient directly. One mother would not permit an operation on her child unless she could be present; but she was the only one of the sort. Indirectly it has probably cost me a few more. I have heard that some people think it very queer that "Dr. Gifford will not allow any relatives to be there"; but the statistics of my clinic do not indicate that any large number have stayed away on that account. When they object, I explain to them as kindly as possible that some people cannot control themselves at an operation, and that while I feel quite certain that they, in particular, would not be troublesome, still, a rule is a rule and must be enforced to avoid the appearance of partiality. Since I have learned to modulate my voice this has always worked.

I consider this rule an important one because it is best for the relatives, for the surgeon and for the patient. It is best for the relatives because it saves them the shock of witnessing the struggles and groans of the semiconscious patient. It is best for the doctor because it relieves him of the influence which the presence of anxious relatives always exerts. Generally this influence is merely depressing; but sometimes it is positively disturbing, as in one of the cases of my early practice, when a stalwart father stood by and encouraged me saying, "By Heaven, Doc, if you hurt my boy's eyes I'll kill you!" I think it was this case that made me adopt the rule. Moreover, if anything goes wrong with the anesthetic or the operation and you think the patient may be going to die, you all know how pleasant it is to have one or more relatives right at hand. Finally, and most important of all, the rule works in the best interests of the patient by leaving the mind of the surgeon free to follow the dictates of his reason and his conscience, regardless of appearances. There doubtless are surgeons of strong enough fiber to be above such influences; but I can easily conceive a situation in which the operator might swerve a little from the proper procedure because, to a relative, it would seem brutal or reckless; and in case of a bad result, he would be blamed. Even aside from such ticklish situations, I think it will be readily admitted that in all serious operations the surgeon will, in the long run, be better able to give the case the proper consideration if he is free from the bother which the presence of relatives produces. I am quite sure that many others follow this rule, but it is by no means as generally adopted as it should be. It ought to be practically universal, so that the public may be educated on the point and the young surgeon will not be afraid to enforce it.

HAROLD GIFFORD, M.D., Omaha.

Does the Cornea Aid in Accommodation?

To the Editor:—I have searched repeatedly for a statement that the cornea was concerned with the accommodation of the eye in vision, but so far in vain. When using the ophthalmometer in looking for astigmatism in children, I frequently see the cornea become more or less convex, in response to accommodation, sometimes as much as from 1 to 4 diopters. The ciliary muscle is circular—a sphincter muscle, so to speak. It acts at the edge of the cornea, and the eyeball is more or less elastic. When the ciliary muscle contracts to take the tension off the lens, it makes the cornea bulge or become more convex, thus aiding in the act of accommodation. Stress has been laid on the idea that the lens is the great factor in bringing the rays of light to a point on the retina, when the truth is that it does only four fifteenths of the work, the remaining eleven fifteenths being done by the

cornea and aqueous. It may be asked why the young patient having cataract operation has lost all his power of accommodation. In reply I would ask why the person receiving a blow on the eye sometimes loses all his power of accommodation at once, and the eye becomes myopic and the pupil dilated with all the eye structures apparently physically intact.

C. S. MINNICH, M.D., Palmer, Neb.

[COMMENT.—The foregoing theory of accommodation would be decidedly interesting and of undoubted value if the observations could be backed up by facts. This does not seem to be the case so far as these observations have a bearing on the actual mechanism of accommodation. The annular portion of the ciliary muscle, which has most to do with the relaxation of the suspensory ligament of the lens, is separated from the sclerocornea by the radiating fibers of that muscle, and it is difficult to see how the annular portion can exercise any action on the cornea: while the longitudinal portion of the muscle, having its origin near the sclerocorneal margin, is fixed at this point, so that when it contracts, its action is to bring the parts situated at its insertion in the direction of the origin of that muscle; that is, the movement is forward rather than backward. Thus it can have very little if any action in altering the shape of the cornea.

The radius of curvature of the cornea, when seen through the ophthalmometer, sometimes appears to change to a slight degree; but this can be caused by ever so slight a movement of the patient's head if it is not held absolutely firm against the head-rest of the instrument.

In referring to the indexes of refraction of the different mediums of the eye, our correspondent is confusing refraction with accommodation. No one will deny that the cornea and other mediums of the eye have much to do with refraction, but the mechanism of accommodation is an entirely different thing. The illustration used—of the absence of accommodation after the removal of the lens—proves conclusively that this act was accomplished by the lens; and loss of accommodation in an eye that has received a blow, when "the pupil is dilated, with all the eye structures apparently intact," indicates that the blow destroyed that branch of the third nerve which supplies the ciliary muscle and the sphincter iridis, resulting in the dilated pupil and absolute loss of accommodation.—ED.]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MECHANISM OF DEATH IN NEPHRITIS, ARTERIOSCLEROSIS AND ERYSIPELAS—EFFECT OF GROUND GLASS

To the Editor:—A medical witness was asked in court to describe to the jury the mechanism of death in (1) chronic nephritis, (2) arteriosclerosis and (3) erysipelas. (4) Now and then I read and hear of ground glass being employed because of its celerity of action. I have always thought this to be one of the many semimedical myths, and shall appreciate an explanation of this belief.

C. P. FRISCHBIER, M.D., Brooklyn.

ANSWER.—1. It is believed that the cause of death in chronic nephritis is poisoning with the substances, their derivatives and antecedents, which, with healthy kidneys, are excreted by the urinary organs. The alterations in the body following death from nephritis indicate that there is a failure of the heart to maintain the circulation, and that this is accompanied by severe alterations in the central nervous system. The exact mechanism of death in nephritis will be better understood when the chemistry of this poisoning is fully demonstrated.

2. Death from arteriosclerosis, when uncomplicated by other serious diseases, such as cerebral hemorrhage, extensive renal alterations, etc., is usually "death from old age," although its development varies greatly according to the age of the individual. The ultimate mechanism is, of course, not the same in every instance.

3. Death from erysipelas is, if uncomplicated, due to the poisonous action of the toxins of this disease. The chemical nature of the toxins being as yet unknown, the mechanism of their action is unexplained.

4. Ground glass is mentioned among the mechanical poisons in comprehensive works on forensic medicines and toxicology. A finely ground glass like meal is regarded by some as harmless. When coarsely ground the mechanically produced lesions of the lining of the gastro-intestinal canal resemble a catarrhal and hemorrhagic inflammation. Death may be due to perforation of the stomach or bowel or to infection of the wounded places and extension of the inflammation.

FRAUDULENT CANVASSERS AND COLLECTORS

To the Editor:—Have you any agents or representatives of the poor student type who are making Herculean efforts to work their way through college by soliciting subscriptions to THE JOURNAL? This territory has been pretty well explored by an individual who professed to be authorized to solicit subscriptions. He claimed to be representing the Michigan Educational Association of 503 Woodward Street, Detroit. May I hear from you in regard to this matter?

HENRY T. KELLY, M.D., White Plains, N. Y.

ANSWER.—We have repeatedly published warnings against fraudulent canvassers and collectors—sometimes in the Miscellany, sometimes in the News and sometimes in the Editorial department. We print the foregoing letter again to emphasize—and under Queries and Minor Notes—the need of being on the watch for this class of swindlers. This letter from Dr. Kelly is merely one of many which we have received.

In the past we have referred specifically to this scheme operated under the title "Cornell Educational Association," according to which the solicitor presents himself as a contestant for a scholarship offered by an organization of this name. The same plan is worked under other names, as for instance the "National Educational Association," the "Michigan Educational Association," etc. The form used in the last-named plan was reproduced in THE JOURNAL, Oct. 23, 1915, p. 1472.

ANAPHYLAXIS TO EGG ALBUMIN

To the Editor:—Recently I was consulted by a patient who was unable to take the smallest amount of egg in any form. If a spoon was used to beat eggs and then to stir his coffee, he became very much nauseated, and vomited violently, the symptoms being much like anaphylactic shock. Would injections of small quantities of egg at first with gradual increase of dosage create a resistance?

F. C. HODGES, M.D., Richmond, Va.

ANSWER.—Such instances are typically anaphylactic and, therefore, susceptible to the same type of treatment as other instances of anaphylaxis. The following are references to recent literature on the subject:

Besredka, A., and Bronfenbrenner, J.: Anaphylaxis and Antianaphylaxis to Egg Albumin, *Ann. de l'Inst. Pasteur*, May 25, 1911.

Koessler, K. K.: Bronchial Asthma Due to Hypersusceptibility to Hen's Eggs, *Illinois Med. Jour.*, January, 1913.

Lesné, E., and Richet, C.: Alimentary Anaphylaxis to Eggs, *Arch. de méd. d. enf.*, February, 1913.

Miller, S. R.: Koplik's Spots on Tonsils of a Child Found to be Anaphylactic to Egg-Albumin, *Bull. Johns Hopkins Hosp.*, March, 1914.

Bronfenbrenner, J.; Andrews, V. L., and Scott, Z. R.: Nature of Idiosyncrasy to Egg-Protein in Human Beings, THE JOURNAL, April 17, 1915, p. 1307.

Rich, H. M.: Infantile Sensitization to Egg Albumin, *Michigan State Med. Soc. Jour.*, November, 1914.

Talbot, F. B.: Asthma in Children: Its Relation to Egg Poisoning, *Boston Med. and Surg. Jour.*, Nov. 5, 1914; abst., THE JOURNAL, Nov. 21, 1914, p. 1880.

ANESTHESIN

To the Editor:—What is the composition of anesthesin? Does it contain any narcotic or cocain? Is it under the ban of the Harrison Narcotic Law?

CHARLES W. KNOX, M.D., Indianapolis.

ANSWER.—Anesthesin is ethyl aminobenzoate, the ethyl ester of paraminobenzoic acid. As stated in New and Nonofficial Remedies (p. 30), anesthesin is one of the products which owe their existence to the discovery that the local anesthetic action of cocain is due to the radical of benzoic acid in combination with a nitrogen-containing basic group. On the whole, however, the constitution of anesthesin differs widely from that of cocain.

Treasury Decision 2194 requires the registration of any "artificial substance or preparation which is or may be substituted for cocain, alpha or beta eucaine, or any of their salts as ordinarily prescribed or used, and not necessarily to a purely synthetic substitute which, chemically, is identically the same as the drug for which it may be so substituted." This ruling evidently is intended to include anesthesin.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

California: Los Angeles, December 14. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

Delaware: Dover and Wilmington, December 14. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

Florida: Jacksonville, December 7-8. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

Kentucky: Louisville, December 7-9. Sec., Dr. A. T. McCormack, Bowling Green.

Louisiana: New Orleans, December 2-4. Sec., Dr. E. L. Leckert, 716 Macheca Bldg., New Orleans.

Maryland: Regular, Baltimore, December 14. Sec., Dr. J. McP. Scott, Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

Missouri: St. Louis, December 13-15. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

Ohio: Columbus, December 7-9. Sec., Dr. George H. Matson, Columbus.

Virginia: Richmond, December 14-17. Sec., Dr. J. N. Barney, Fredericksburg.

Medical Cults in Ohio

In Ohio the medical cult situation has about reached the limit of absurdity. Fourteen of these cults are specifically mentioned in the new license law, and others are provided for by the terms "any other similar branch of medicine and surgery that may now or hereafter exist and not here specified." The Ohio legislature did a sane thing, however, in having them all placed under the jurisdiction of the state board, thereby placing supervision of all practitioners of the healing art in a single board. In no other way would the public be protected against gross ignorance and incompetence on the part of practitioners of these various cults. Needless to say, the Ohio board will have its hands decidedly full. It has become its duty to work out many of the details for the control of these cults, and its experiences will undoubtedly be of value to other state boards, which sooner or later may have to deal with the same problems. At a recent meeting of the Ohio board, official definitions[1] were adopted for each of the medical cults, which have been classified in five groups as follows:

Group 1

Chiropractic is understood to be the detecting and adjusting by the hand of vertebral subluxations.

Naprapathy is understood to be the detection and correction, by the hands only, of diseased spinal connective tissue or ligaments.

Spondylotherapy is understood to be the examination, by palpation, of the spinal column for disease and its treatment by percussion, traction, vibrotraction, or vibration, and concussion.

Electrotherapy is understood to be the administration of electricity in any form for the relief or cure of the sick.

Hydrotherapy is understood to be the administration of water for the relief or cure of the sick.

Neuropathy is understood to be the specific treatment of the nerves by manual or physical therapeutic measures.

Mechanotherapy is understood to be the administration of manual, physical or mechanical therapeutic measures for the relief of the sick.

Group 2

Suggestive therapy is understood to be the treatment of disease by suggestion.

Psychotherapy is understood to be the treatment of disease by making mental impressions or suggestions.

Magnetic healing is understood to be the treatment of disease by applied suggestion.

Certificates authorizing practice under Group 1 or Group 2 permit the holders to examine and diagnose, and to assume responsibility for the care of the patient, but the holders must limit their practice to the branch or branches of medicine or surgery specified in the certificates.

Group 3

Massage is understood to be a systematic therapeutic friction stroking, kneading, or manipulation of the body.

Swedish movement is understood to be the treatment of disease by movements or exercise.

The two foregoing classifications include:

Medical gymnastics, which is understood to be systematic therapeutic muscular exercises.

Vibromassage, which is understood to be massage by rapidly repeated light percussion with a vibrating hammer or sound.

Electromassage, which is understood to be massage by means of an electric vibrator.

Heliotherapy, which is understood to be the exposure of the body to the sun's rays, or to the rays of light, as a therapeutic measure.

Thermotherapy, which is understood to be the application of heat as a therapeutic measure.

Electric light bath, which is understood to be the exposure of the body to electric lights, or other therapeutic rays, as a therapeutic measure.

Certificates authorizing practice under Group 3 do not permit the holders to examine, diagnose or assume responsibility or care of patients. Holders of these certificates must limit their practice to the branch or branches of medicine or surgery specified in the certificates.

Group 4

Chiropody is understood to consist of surgical treatment of ailments of the hand or foot, nonsystematic or infected in character. It shall also include the fitting, prescribing or recommending of appliances, devices or shoes for the cure, correction or relief of minor foot ailments.

Certificates authorizing the practice of chiropody permit the examination of the appropriate parts and diagnosis, but do not confer the right to operate on the hands or feet for congenital or acquired deformities, or for conditions requiring the use of general anesthetics or which require incision below the level of the skin. Holders of certificates authorizing the practice of chiropody must conform in their practice to the definition of chiropody as here given.

Group 5

Optometry is understood to be the employment of any measure other than the use of drugs, for the measurement of the powers of vision and the adaptation of lenses for the aid thereof.

Certificates authorizing the practice of optometry permit examination of the eye, but aside from the fitting of glasses do not permit any treatment of whatever nature for diseased conditions either local or general. Holders of certificates authorizing the practice of optometry must conform to the definition of optometry as here indicated.

Limitation of Practice

Those who receive licenses to practice one or more of these branches will be limited closely to the practice of the branches specified in their certificates, in conformity with the definitions as herein given, and will not be permitted to practice any other branch—even though the second branch is in the same grouping. For example, a man licensed to practice spondylotherapy will be forced to confine his practice to the "examination, by palpation, of the spinal column" for the cause of the disease, and will also be permitted to treat "by percussion, traction, vibrotraction or vibration and concussion." He will not be permitted to administer electric treatments, unless he is also licensed as an electrotherapist, or to use hydrotherapeutic measures, unless he is also licensed as a hydrotherapist. In his practice he will be confined strictly to the definitions given above, and encroachment on other fields will subject him to revocation of his limited license. This point will be emphasized by the parchment licenses to be issued by the board. They will bear in bold letters an exact statement of what the practitioner may do.

Educational Requirements

The board has established minimum educational requirements for those who seek to enter any of the "limited fields" after Oct. 1, 1915, the final date fixed for applying under the exemption clauses. These requirements, as announced by the board, are as follows:

Groups 1 and 2

Those who make application to practice any limited branch or branches of medicine or surgery under Group 1 or 2 after Oct. 1, 1915, must submit documentary evidence of:

1. As published in the Ohio State Medical Journal, September, 1915, with modifications by the Ohio State Medical Board.

(*a*) Preliminary education received prior to entering on the study of a limited branch of medicine or surgery equal to that required of medical students prior to entering on the study of medicine, such requirements to be passed on by the entrance examiner of the state medical board in accordance with Section 1270, General Code of Ohio, and (*b*) satisfactory completion at a recognized school of a course of study consisting of:

1. At least two years of thirty-two weeks each, exclusive of holidays and vacations, in two separate calendar years, spent in the study of anatomy, physiology, chemistry, bacteriology, pathology, hygiene and diagnosis such as has been prescribed by the state medical board as the minimum requirement for medical colleges.

2. A third year of study at a recognized school including preventive medicine, symptomatology, diagnosis, pathology and therapeutics as it relates to the appropriate limited branch of medicine or surgery, certificate to practice which is applied for.

3 After having met the requirements of *a* and *b*, and after having satisfied the state medical board concerning the character and moral standing, the candidate must also pass a licensing examination, conducted by the board.

GROUP 3

Those who make application to practice any limited branch of medicine or surgery under Group 3 after Oct. 1, 1915, must submit documentary evidence of:

(*a*) Preliminary education equal to the first two years of a first-grade high school course of Ohio, and (*b*) satisfactory completion of a course of study in the appropriate branch in a school recognized by the state medical board, giving a course of practical and theoretical instruction in, and an approved amount of, anatomy, physiology, chemistry, bacteriology and hygiene, covering an instruction period of not less than four months.

(*c*) After having satisfied the board concerning the character and moral standing, the applicant must also pass a licensing examination conducted by the state medical board.

GROUP 4

Those who make application to practice chiropody after Oct. 1, 1915, must:

(*a*) Show proof of preliminary education equal to the first two years' work of a first-grade high school of Ohio.

(*b*) Submit a diploma from a school or college of chiropody, recognized by the state medical board.

(*c*) Pass a licensing examination conducted by the state medical board, after having satisfied the board concerning the character and moral standing.

GROUP 5

Those who make application to practice optometry after Oct. 1, 1915, must have completed two years of high school, submit a diploma from a school or college of optometry recognized by the state medical board, and must pass a licensing examination conducted by the state medical board, after having satisfied the board concerning the character and moral standing.

The requirements for those who seek to practice in Groups 1 and 2 are higher than in the remaining three. Candidates to practice in these groups must have completed a high school course, must have spent at least two years in a recognized medical school in the study of the fundamental medical sciences, and must have taken a third year in a cult school *recognized by the board*. Those who seek to practice massage movements must have completed at least two years of high school work and have taken a course of at least four months in a recognized massage school, including a small amount of work in anatomy, physiology, chemistry, bacteriology and hygiene. The requirements for chiropody (Group 4) and optometry (Group 5) are practically the same, with the exception that the length of the course is not mentioned and will later be fixed by the board. The reason for this variation in required qualifications lies in the fact that those who seek to practice under the first two groups set themselves up as "healers," ready and anxious to treat all conditions not specifically prohibited by the law. Chiropodists, masseurs and optometrists do not take in such a wide field.

Georgia June Report

Dr. C. T. Nolan, secretary of the Georgia State Board of Medical Examiners, reports the written examination held at Atlanta and Augusta, June 2-4, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 80. The total number of candidates examined was 172, of whom 162 passed and 10 failed. Fifteen candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Birmingham Medical College		
(1913) 81; (1914) 80.8, 84.2; (1915) 82.4, 83, 86.3, 86.7, 89.6, 91.5.		
Atlanta Medical College	(1914)	82.5, 86.7; (1915) 80.1, 80.7, 81.5, 81.7, 82, 82.8, 82.9, 83.1, 83.1, 83.5, 83.7, 84.2, 84.2, 84.3, 84.4, 85.2, 85.2, 85.3, 85.3, 85.4, 85.4, 85.4, 85.5, 85.5, 85.5, 85.5, 85.8, 85.8, 85.8, 86, 86, 86.2, 86.4, 86.4, 86.4, 86.5, 86.6, 86.6, 86.7, 86.8, 86.8, 87, 87.3, 87.5, 87.5, 87.7, 87.7, 87.7, 87.8, 87.8, 87.8, 87.8, 87.9, 88, 88, 88.1, 88.1, 88.2, 88.2, 88.2, 88.2, 88.2, 88.4, 88.4, 88.4, 88.5, 88.5, 88.6, 88.7, 88.7, 88.9, 89, 89.2, 89.2, 89.2, 89.5, 89.5, 89.6, 89.6, 89.6, 89.7, 89.8, 89.8, 89.8, 89.9, 90, 90.1, 90.1, 90.2, 90.6, 90.7, 90.8, 90.9, 90.9, 91, 91.2, 91.2, 91.5, 91.5, 91.6, 91.6, 91.7, 91.9, 91.9, 92, 92, 92.2, 92.8, 93, 93.1, 93.2, 94.7, 95.2.
Georgia College of Eclectic Med. and Surg.	(1914)	89.4
Southern College of Medicine and Surgery	(1913)	88
University of Georgia	(1915)	
81.1, 82.9, 83.1, 84.8, 85.3, 85.7, 87.9, 89.6, 90.2, 90.9, **92**, 93.3.		
Chicago College of Medicine and Surgery	(1915)	91.6
College of Physicians and Surgeons, Chicago	(1912)	85
Rush Medical College	(1915)	92.2
Johns Hopkins University	(1905)	94
Tufts College Medical School	(1914)	82.4
Leonard Medical College	(1892)	83.5
Jefferson Medical College	(1911)	88.1
University of Pennsylvania	(1914)	96.2
Meharry Medical College	(1912) 84; (1915) 80, 80, 80.1, 80.2, 83.1, 83.9, 86.3, 87.3, 87.4, 88.7, 88.7, 91.3, 91.3.	
University of Tennessee	(1914)	80.7
University of Toronto	(1907)	90.5
FAILED		
Atlanta Medical College	(1915)	78.3
Bennett Medical College	(1914)	76.4
Knoxville Medical College	(1908)	74.1
Meharry Medical College		
(1908) 64.4; (1912) 75.7; (1914) 73.4, 76.1; (1915) 74.1, 74.9, 75.6.		

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Kentucky School of Medicine	(1891)	Kansas
Tulane University of Louisiana	(1913) (1914)	Louisiana
Johns Hopkins University	(1913)	Virginia
Central Medical College of St. Joseph	(1903)	Nebraska
Marion-Sims College of Medicine	(1892)	Iowa
North Carolina Medical College	(1902)	N. Carolina
New York Med. Coll. and Flower Hosp.	(1913)	New Jersey
Jefferson Medical College	(1912)	W. Virginia
University of Pennsylvania	(1896) (1912)	Penna.
University of Tennessee	(1914)	Arkansas
Baylor University	(1914)	Texas
University of Vermont	(1908)	Vermont
University of Virginia	(1911)	Penna.

North Dakota July Report

Dr. G. M. Williamson, secretary of the North Dakota State Board of Medical Examiners, reports the practical, oral and written examination held at Grand Forks, July 6-9, 1915. The total number of subjects examined in was 13; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 11, of whom 7 passed and 4 failed. Eleven candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Rush Medical College	(1902) 78.8; (1915)	82
University of Louisville	(1910)	77
John A. Creighton Medical College	(1912)	75.5
Vanderbilt University	(1915)	75
University of Manitoba	(1915)	**83**, 83.5
FAILED		
Chicago College of Medicine and Surgery	(1915)	72
University of Illinois	(1914)	69.1
Starling-Ohio Medical College	(1913)	69.9
Milwaukee Medical College	(1912)	73

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Hahnemann Medical College and Hospital, Chicago	(1909)	S. Dakota
Northwestern University	(1909) Minnesota; (1911)	Illinois
Rush Medical College	(1912) Minnesota; (1914)	Illinois
University of Illinois	(1911)	Illinois
Indiana Medical College	(1906)	Indiana
University of Minnesota	(1912)	Minnesota
Barnes Medical College	(1907)	Illinois
John A. Creighton Medical College	(1912)	S. Dakota
University of Pennsylvania	(1877)	Iowa

Book Notices

Peroral Endoscopy and Laryngeal Surgery. By Chevalier Jackson, M.D., Professor of Laryngology, University of Pittsburgh. Cloth. Price, $5. Pp. 705, with 496 illustrations. St. Louis: The Laryngoscope Company, 1915.

The author carefully describes the technic of bronchoscopy and esophagoscopy, and gives good descriptions of the parts visualized. Of special value is his discussion of the subject of anesthesia. He has been a constant advocate for avoidance of anesthetics when possible, even those local in effect, in these operations. In the early part of this kind of work, few surgeons realized that a considerable number of operations could be done with very little discomfort to the patient and with much more safety without the use of any anesthetic, especially in children. In many other cases only a small amount of a local or general anesthetic is desirable. The volume is not limited to bronchoscopy and esophagoscopy, but treats quite fully the various surgical affections of the larynx, air passages and esophagus. The reader will be disappointed in the lack of authentic information regarding the mortality in operative procedures for the removal of foreign bodies from the air passages, and many operators will be surprised at the optimistic views on the results of treatment and surgical measures that appear to pervade the whole book. Although the author has been phenomenally successful in his own work we think it would have been better if the gravity of these procedures had been duly emphasized. On page 319, in a discussion of unsuccessful cases of bronchoscopy for foreign bodies, a slip of the pen is probably responsible for the following statement: "The cases where bronchoscopy has failed have been limited to cases in which the foreign body could not be found, and these have invariably been very small bodies far down and far out at the periphery." The latter part of this sentence overlooks some cases of comparatively large foreign bodies that have entered the bronchus leading to the upper lobe of the lung. The statement on page 320, "In case of small foreign bodies far down and far out at the periphery, after two expert bronchoscopists have failed to find the foreign body, the intruder should be removed by external operation, and the sooner after bronchoscopic failure the better," does not seem to be justified by experience, when we realize that such patients often live for years without operation and with little discomfort, and that the external operation is often unsuccessful and may prove fatal. In such cases, the question whether or not an external operation should be recommended would depend on many conditions that are not here considered. Again the possibilities of careful fluoroscopic bronchoscopy are not considered. The work is elucidated by means of numerous case records, which often prove of the greatest value to an operator. The volume is beautifully illustrated and contains an exceptionally good index.

The House Fly: A Slayer of Men. By F. W. Fitzsimons, F.Z.S., F.R.M.S., Director, Port Elizabeth Museum. Boards. Price, 35 cents. Pp. 89, with illustrations. New York: Longmans, Green & Co., 1915.

The warfare against the house fly seems to be going on in all lands. The most effective as well as the most necessary campaign method is the education of the people as to the nasty habits of the fly and the dangers of associating with him. The human race has for so long regarded him as an inevitable household companion that it is first necessary to convince people that the fly is neither desirable nor necessary as a room mate. This is both effectively and interestingly done by Fitzsimons. His object is to furnish a small book of a popular nature within the financial reach of everybody. In the ninety pages of the little volume are all the essential facts regarding flies, their origin, habits and dangers, and methods for preventing and destroying them, all told interestingly and well illustrated. While not so greatly needed in this country, in which the antifly campaign started and in which it is still several years ahead of any other country, this little book will undoubtedly be of great value in the antifly campaign in England.

Miscellany

Scarcity of Drugs in Austria

The *Wiener klinische Wochenschrift*, September 23, publishes a communication from the Pharmacologic Institute of the University of Vienna which embodies the results of investigation of the supplies of drugs in Austria. It comments on the effect of the war on the drug trade as not only preventing importation of drugs formerly procured from abroad, but also as affecting and reducing the production of medicinal preparations and drugs in the home country. This entails a scarcity of many drugs, and this scarcity can only increase with the duration of the war. It is emphasized, however, that the foregoing applies only to the civilian population. "The military authorities," it continues, "foresaw this lack of drugs and made provision accordingly, so that a scarcity of drugs in the army medical department is scarcely to be feared." By inquiring at hospitals and wholesale drug houses and pharmacies, the present supply on hand has been estimated, and a number of substitutes are proposed for the more important drugs. "Digitalis purpurea has hitherto been imported, mostly from Germany, but the German empire has now prohibited its further exportation, and there is a possibility of a dearth of this drug. In its place can be used the various preparations of digitalis, of which there are large supplies on hand. Or strophanthus can be used as long as the supply holds out." The yellow flowering digitalis grows in Austria, and is said to have the same qualitative action as digitalis purpurea.

To forestall a lack of camphor, physicians are advised to reserve camphor for internal use, and order other substances, such as spirit of mustard, instead of camphor rubs. "Ipecac and senega are drugs of foreign origin, the importation of which has been cut off by the war. In their place are recommended soap-bark (cortex quillajae) and the root of *Saponaria rubra*, in decoction, the dose of the quillaja being a third or a fourth of the senega dose, and of the root of the *Saponaria rubra* the same as the senega dose.

"The conditions in regard to opium may be changed by importation of Turkish opium, but at present the supply is scanty, and rigid economy in prescribing morphin and codein is recommended. Also the use of the synthetic preparation papaverin, in place of morphin, when cramps of nonstriated muscle are the indication for the sedative.

"Senna, aloes and jalap are also of foreign origin. Castor oil came from France and Italy, and the supply is entirely exhausted. In their place the use of phenolphthalein preparations and of purgative mineral waters or their salts is recommended. Frangula grows in Austria, and its extract ranks with cascara. The use of frangula is commended not only for the present, but also later, to promote its home production. Austrian rhubarb contains only about half as much of the essential element as the Chinese, so the dose must be doubled.

"There is a limited supply of atropin and scopolamin on hand, so they must be sparingly prescribed. The production of these alkaloids and also of salicylic acid and its preparations might well be undertaken in Austria, as the mother substances, belladonna, hyoscyamus and datura, as well as phenol are on hand in sufficient amounts and the manufacture does not present insuperable difficulties.

"Apomorphin is to be replaced by other emetics, such as copper sulphate. Physostigmin must be used sparingly. The obstetric and gynecologically important drug, hydrastis, is at present hard to obtain, and the supply of the drug and of its alkaloids threatens to run out completely. As a substitute should be used the cheaper and fully as effectual synthetic, hydrastinin, and the preparations made from it. The antipyretics, pyramidon and its synonymous trade names, amidopyrin, dimopyran, also antipyrin, phenacetin and antifebrin (acetanilid) are none of them of domestic manufacture, and their exportation has been prohibited. The supply of some of them is already exhausted, so that other drugs will have

to be used in their place. The same applies to aspirin and its chemical equivalent, acetylsalicylic acid, which are no longer allowed to be exported.

"Among the drugs used for external application, both sulphur and iodin have been cut off. Economy in the use of each is therefore recommended. Instead of iodin, so far as surface disinfection is concerned, bromin, which is cheaper, should be used, dissolved in chloroform or benzin. A 5 per cent. alcoholic solution of tannic acid is proving useful likewise for this.

"In place of Peruvian balsam; the supply of which is now cut off, we have at our disposal ichthyol and its preparations (thiol, thigenol, etc.) as well as the tar preparations on the market, for surgical use.

"The pure zinc oxid of the Austrian Pharmacopeia (zincum oxydatum albissimum) is not produced in Austria, and its exportation is prohibited. For external use the domestic zincum oxydatum venale can be used instead, if the contaminating lead content does not exceed 0.5 per cent.

"There is no lack of disinfectants; boric acid, which is not to be obtained, can thus easily be dispensed with.

"A word in closing on another matter which affects the prescribing of drugs, that is, the question of proprietaries—*das Spezialitäten-Wesen oder besser gesagt Unwesen*. These manufactured specialties are put up ready for use in specified doses, and they are composed of at least two ingredients. On account of their durability and convenience, there is nothing to be said against the use of simple remedies put up in compressed form (tablets, pastilles, etc.), in exact dosage, and generally with the addition of some indifferent constituent. It cannot be denied that some of these ready-made combinations of drugs are well chosen. But the overwhelming majority of proprietary pharmaceuticals are made up so irrationally that the physician who prescribes them—regardless of all other phases of the matter—reveals the low level of his knowledge. It is time for physicians to break with this mode of prescribing, which has no advantage except that of convenience." The communication is signed by Profs. J. Moeller and H. H. Meyer, both authors of well-known textbooks on materia medica.

Scarcity of Drugs in Sweden

The authorities in Sweden have issued an official circular addressed to all physicians in regard to being economical in prescribing drugs. The circular refers to one issued April 23, 1915, in which all physicians, dentists and veterinarians were enjoined to observe rigid economy in prescribing drugs, and the drugs were enumerated which were the most difficult to procure and with which all concerned would have to be most sparing in their use. The new circular states that this admonition has hitherto been willingly followed and hence the work of the authorities to keep the country's supply of drugs from becoming depleted has been materially aided. In the meanwhile, circumstances have changed, so that the exportation of practically all drugs has been forbidden; but arrangements have recently been made with certain foreign authorities in regard to the importation into Sweden of supplies of drugs calculated to meet the need for half a year. The Swedish authorities appeal to physicians, dentists and veterinarians to use the greatest possible economy in prescribing drugs. The amount of the drug prescribed must be calculated for the patient's indispensable need and no more. Besides this, the drugs that are obtainable in Sweden should be given the preference, and when a drug of foreign origin has to be prescribed the least expensive should be chosen, so that the financial limit set by the exporters should be approached as slowly as possible.

Foreign proprietaries and medicinal preparations with protected names should be used as little as possible, and in their place Swedish preparations should be prescribed or the chemical equivalents, as given in a list enclosed. The circular emphasizes the importance of heeding exclusively the recommendations of this list.

Medicolegal

Fraud in Statements About Medicines

(United States vs. American Laboratories (U. S.), 222 Fed. R. 104)

The United States District Court for the Eastern District of Pennsylvania, in denying motions in arrest of judgment and for a new trial after the defendant had been convicted of violating the Food and Drugs Act and the amendment thereto, says, among other things, that the first three counts of the indictment were under the original act, and charged different acts of misbranding, or false and misleading statements respecting the composition of a medicine put out by the defendant under the trade-name of "Bad-Em Salz." The fourth count was under the Sherley amendment to the original act, and charged the offense of making false and fraudulent statements as to the curative properties of the salts manufactured by the defendant. The case was fully and exhaustively tried and defended, resulting in a verdict of guilty.

The first complaint was an attack on the constitutionality of the Sherley amendment. The position was taken that it is beyond the power of congress to make a crime of the act of a defendant in proclaiming his belief in the curative properties of a medicine. However, the argument on which this was based is so fully met by the opinions accompanying the ruling in U. S. vs. Johnson, 221 U. S. 488, that the court does not feel called on to give it further consideration.

But over and beyond the specific grounds of complaint lay the broader one that there was no evidence in the case to justify the defendant's conviction of a crime. The situation in this view of it might be voiced in the phrase that the defendant, if punished, would be punished for the crime of medical heterodoxy, and not for any offense against the law. In other words, the president of the defendant company, who was himself a physician, advanced a theory, advocated by others as well as by himself, for the treatment of what are commonly known as "gallstone cases." In opposition were eminent physicians and surgeons, and, as the argument might concede, the weight of scientific medical opinion was against him. Inasmuch, however, as the treatment was the subject of controversy, and its efficacy within the domain of opinion, the minority could not be convicted of crime merely because they were outnumbered. It is certainly true that a man should not be convicted of fraud merely because he advocates a theory of medicine which at the time has not received the sanction of the indorsement of the medical profession. It is equally true that a fraud or a faker cannot escape the consequences of his fraud by the mere fact that some one may honestly believe in the theory which he fraudulently and dishonestly exploits. The fact that there was a widely spread disposition among people to give credence to the statement because of a superstitious belief in its efficacy, or indeed such a reputation for the remedy itself as to make people prejudiced in its favor, would not diminish, but would increase the guilt of him who sought to make money by false statements and fraudulent devices.

The motive and policy of the law which lies behind legislation of this general kind is highly promotive of public good. The evils sought to be removed and prevented spring out of conditions requiring tactful, and even delicate treatment. Such laws, if arbitrarily enforced, may easily take the form of an unwise dictatorial interference with the pursuits of others. There is a natural temptation to overdo by trenching on the domain which properly belongs to the ethics of the medical profession. There is danger, also, that the public will come to rely on the protection promised by such laws, and therefore relax individual watchfulness. The temptation even to those who cannot fairly be termed unscrupulous is to yield to the suggestions of greed and come as close to the forbidden line as they safely can. The only sure course in the administration of laws of this kind is to leave the determination of guilt or innocence in a given case to the sound judgment of a jury, supervised by the wisest scrutiny which the trial judge can give to make sure that no one is convicted without guilt.

Right of State as Against Relatives to Discontinue Free Care of Patients

(In re Clark (Mich.), 152 N. W. R. 920)

The Supreme Court of Michigan affirms a judgment requiring Sarah P. Clark, whose son was admitted to the state hospital as a patient in 1901, to pay to the state a certain sum for the cost of maintaining the patient at the hospital after the taking effect of Act No. 101, Public Acts of 1909, entitled "An act to revise the law relative to the care of the feebleminded and epileptic." The court says that no question was raised concerning the power of the legislature to provide for an enforced contribution from relatives for the support of patients committed to the institution as public patients. The only question was whether it was plain that it intended to make the law of 1909 apply to all public patients then in the institution as well as those thereafter received. Admitting that the state may cause these unfortunate persons to be segregated and kept and maintained at a public institution, and may compel relatives to bear, in whole or in part, the cost of maintenance, it seems clear that it may fix the time when such contributions shall begin. It would not lose the right by foregoing its exercise. No vested right in a relative to have the free maintenance of a patient continued would arise because for a period the state had freely maintained the patient. There is in Act No. 101 no language which implies that relatives of patients already admitted as public patients will not be called on to contribute to the expense of maintenance to be thereafter furnished by the state. Consequently, assuming the power to exist to enforce contributions at any time, fair construction would make the act applicable to the relatives of those then within the institution, as well as to the relatives of those thereafter admitted.

Discovery of Cancerous Condition After Judgment for Malpractice in Discontinued Operation

(Mason, Evans and Keys vs. Meloan (Ky.), 177 S. W. R. 435)

The Court of Appeals of Kentucky holds the defendants Mason, Evans and Keys, physicians and surgeons, entitled to a new trial after plaintiff Meloan had recovered a judgment against them for $3,500 damages for alleged malpractice in an operation for the removal of a goiter from the plaintiff's neck. The court says that the evidence for the defendants showed that they were regarded as competent, skilful surgeons in the community in which they lived and operated. It also appeared from their testimony that when they made an incision about half an inch deep for the purpose of removing the goiter and came into contact with a large vein which it was necessary to ligate, it was discovered to be in such a friable condition that it could not be ligated or closed by the usual methods, so that it became necessary to discontinue the operation and stop the flow of blood in the vein by putting pressure on it through packing inserted into the incision. Stated briefly, according to the evidence for the plaintiff, the defendants were not competent to perform the operation when it turned out to be more difficult than they had anticipated, and when the condition of the vein was discovered they became alarmed on account of their inexperience and incompetency, and their carelessness in leaving the packing in the wound too long caused an infection to set up that prevented the place from healing; while the evidence on behalf of the defendants was to the effect that the course they pursued and the treatment they adopted was proper, and the trouble resulted from the fact that the plaintiff left the hospital too soon and the wound did not have the proper treatment. But, after the trial and the rendering of the judgment against the defendants, another surgeon removed the goiter, discovering, in the course of the operation, a malignant, cancerous condition. Then a new trial was sought by the defendants, on the ground that the failure of the wound to heal was due to the cancerous condition of the goiter at the time the operation was attempted by the defendants, and not to any lack of skill or attention on their part. The court thinks that the evidence of the cancerous condition of the goiter was very material evidence in the case for the defendants, and, while it was true that the suit was defended by them on the theory that the wound was progressing nicely after the attempted operation, and would have healed if the plaintiff had remained at the hospital or had given it the proper attention, yet the court does not think this defense should preclude the defendants from obtaining a new trial on the theory that the condition of the goiter at the time they operated, and its failure to heal, was due to the cancerous condition that existed. The defendants did not know this condition existed and did not prosecute the operation far enough to discover it, but that it was present when the operation was performed was shown with reasonable certainty by the testimony of the surgeon who afterward operated. Probably if the defendants had been more skilful they could have controlled the flow of blood in this vein and have finished the operation, and the evidence for the plaintiff tended to show that the failure of the wound to heal was due to the negligence or lack of skill or want of attention on the part of the defendants. However, this was a matter for the jury on another trial. There was, the court thinks, sufficient evidence to take the case to the jury; but the new evidence made it clear that the defendants were deprived of a defense on which they were entitled to rely, and which they did not discover until after the trial. This new evidence developed facts that might have great weight with the jury in determining the cause that produced the condition of the wound from the time it was made until the date of the trial.

Constitutionality of State Food Law Prohibiting Use of Boric Acid

(Price vs. Illinois (U. S.), 35 Sup. Ct. R. 892)

The Supreme Court of the United States affirms a judgment of the Supreme Court of the State of Illinois which affirmed a conviction of Defendant Price of violating the state pure food law. The violation consisted of a sale in Chicago of a preservative compound known as "Mrs. Price's Canning Compound," alleged to be intended as a "preservative of food," and to be "unwholesome and injurious in that it contained boric acid." The Supreme Court of the United States says that the state has undoubted power to protect the health of its people and to impose restrictions having reasonable relation to that end. The nature and extent of restrictions of this character are matters for the legislative judgment in defining the policy of the state and the safeguards required. In the avowed exercise of this power, the legislature of Illinois has enacted a prohibition—as the statute is construed—against the sale of food preservatives containing boric acid. And unless this prohibition is palpably unreasonable and arbitrary this court is not at liberty to say that it passes beyond the limits of the state's protective authority. But the action of the legislature cannot be considered to be arbitrary. Its judgment appears to have sufficient support to be taken out of that category. Nor can it be said that the legislature exceeded the bounds of reasonable discretion in classification when it enacted the prohibition in question relating to foods and compounds sold as food preservatives. It was contended that the statute as applied violates the commerce clause of the federal constitution, the doctrine with respect to sales in original packages being invoked. The clear inference from the evidence was, however, that the compound was offered for sale at retail in small packages (in envelops) suitable for the consumer, and, nothing appearing as to the character of the shipment into the state, it would be wholly unjustifiable to assume that, in commercial shipments into the state, the small package was segregated or separately introduced. Yet if these small packages were associated in their shipment into the state, as they naturally would be, and were subsequently sold separately or in various lots, these separate packages, although respectively in the original envelops, would not be classed as "original packages" within the rule invoked, so as to escape the local law governing domestic transactions. It does not appear that the state law as here applied is in conflict with any federal rule.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.
Southern Surgical and Gynecological Association, Cincinnati, Dec. 14-16.
Western Surgical Association, Des Moines, Iowa, Dec. 17-18.

THE COLLEGE OF PHYSICIANS OF PHILADELPHIA

Meeting held Oct. 6, 1915

The President, DR. JAMES C. WILSON, in the Chair

Some Applications of Physical Chemistry to Problems in Medicine

DR. HENRY LEFFMANN: Under the term, "physical chemistry" a vast and intricate science of molecular conditions and transformations has grown up, and has begun to throw light in many directions on the problems presented by both living and nonliving matter. The science is abstruse and the facts can only be treated in an elementary way. I will consider two phenomena, "ionization" and the "colloidal state." The phenomena of ionization are concerned especially with the condition ordinarily called solution, the latter term being here limited to fluids produced by association of substances, one of which is primarily a liquid. The term "solution" has a much wider significance in physical chemistry, common glass being considered a solution. Until a few decades ago, the liquids obtained in dissolving common sugar and common salt in water were designated "solutions." It is now known that the activity of the salt has been materially increased while the sugar has suffered no such change. The sodium atoms of the salt have by the act of solution acquired a positive electrical charge, while the chlorin atoms have acquired a negative charge. The proportion of salt thus modified is dependent largely on the mass of water present. The modification of a substance by which it acquires these electrical charges is termed "ionization"; the respectively positively and negatively charged elements are termed "ions." The importance of the change lies in the fact that the chemical activity of the substance and the pressure of the solution are much enhanced by it. It is found that the most potent ionizing liquid is water. Generally the degree of ionization is increased by dilution. Interesting explanations of well-known phenomena are now possible under these principles. Boric acid is of the same type as nitric acid, yet is far less active. The difference is due to the fact that boric acid is but feebly ionized, while nitric acid is largely ionized. This applies also in the dilution of concentrated acetic and sulphuric acids.

The application of the data of ionization to the interpretation of the action of medicines is complicated by the fact that living protoplasm and membranes have specific selective powers, and thus tests in vitro may mislead. For example, under given conditions, mercuric nitrate ionizes to a much greater extent than mercuric chlorid, yet the latter is ordinarily more toxic. According to Höber, this is due to the fact that the chlorid is more soluble in the lipoid substances contained in the membranes, and thus is enabled to get into contact with the protoplasm of the cells. Another important point is the influence of salts on one another. It is far from being generally true that when a mixture of two or more substances shows no appreciable change of condition, such mixture will have the properties of all the ingredients. An instance is that a mixture of mercuric chlorid and hydrocyanic acid is not equivalent to mercuric cyanid because the substances react in a different manner to the dissolving liquid. Inasmuch, however, as other solvents than water act but feebly in ionizing, it is not unlikely that an alcoholic solution of mercuric chlorid and hydrocyanic acid would have a closer equivalency to mercuric cyanid than a solution in water. The cyanids afford several striking instances of the anomalous effects of mixtures. These data seem to point to the importance of simplification in prescriptions. Another point brought into prominence by the progress of physical chemistry is the influence of extremely fine division. By dividing a material finely we greatly increase the facility of chemical action. We also confer among other qualities constant self-agitation and easier passage through porous partitions. Medicines that are insoluble or soluble with difficulty in the fluids of the body should be administered in as fine powder as possible. Manufacturing chemists do not always apply the highest principles of physical chemistry in their processes, and hence we sometimes find in drug stores preparations of distinctly inferior quality.

The physical chemistry of colloids is now occupying a vast army of workers. The initiative in this field is due largely to an English chemist, Thomas Graham, who, in 1861, published the results of experiments on diffusion through membranes, finding that when a mixture was made of two substances, one of which was crystallizable and the other not, the former would pass rapidly through the membrane, while the other would be held back. He divided substances into two classes, "crystalloids" and "colloids." It is now known that a classification of substances into crystalloid and colloid is not fundamental. These are conditions only, and the same substance may assume both states. The crystalline condition probably results when molecular attractions are allowed more opportunity of acting; the colloidal condition results when less opportunity is afforded. Hence we find that crystals are produced by the solidification of a substance from a liquid or gaseous state. Also, the presence of a minute amount of a crystal of the substance in solution will materially promote the separation in crystalline form, acting as a nucleus for the operation of the molecular forces. Whatever may be the effect of uric acid when in the blood or deposited in the tissues, it is a serious interference when separated in the crystalline form from the urine. Experiments made under the supervision of Dr. Martha Tracy of Philadelphia indicate that a full meat diet increases the acidity of the urine. If this is established, it will be an important point; for the principal danger from uric acid is in its separation in the crystalline form in some part of the genito-urinary tract. Such separation is promoted by increased acidity, and if a minute crystal is deposited at any point it will act as a nucleus, bringing about further separation of uric acid and of other compounds held in unstable solution in the urine. The administration of alkalies for the prevention of this separation may lead to the precipitation of substances not soluble in alkaline urine. It is obvious, therefore, how a full meat diet may cause or aggravate uric acid troubles, although not increasing the output of the acid itself. Knowledge of the nature and properties of colloids enables us to explain many physiologic and pathologic phenomena. Intimately connected with this field of chemistry is the subject of enzymes. These probably form the connecting link of living with nonliving matter. They show colloidal properties and possess high powers of absorption. The problem of the cell is largely a problem of physical chemistry.

DISCUSSION

DR. S. SOLIS COHEN: So far as the physicochemical reactions in the living body are the same as those of the laboratory, we may apply the laboratory findings to the problems of biology—to physiology, to pathology and to therapeutics. But as regards the great and increasing number of the outstanding biologic problems of the day, the value of the unknown factor is so great that we must hesitate. Wolfgang Pauli, in an interesting series of studies of the effects of various ions on the living cell, investigated their comparative precipitating powers on proteins, and deduced the laws that: 1. The effect of a salt on a protein is made up in the main of the algebraic sum of the effects of the individual ions. 2. Anions and cations antagonize each other. Pauli found that sodium sulphocyanid tended to reduce blood pressure and to prevent deposition of calcium

in the arterial walls, so that it could be used with good clinical results in cases of arteriosclerosis. He found also that sulphocyanids were even more active than iodids in favoring the formation of readily soluble protein compounds with the heavy metals, and thus favoring elimination in cases of chronic poisoning. Other considerations enter into this problem, as into that of decalcification, but the whole subject comes under the head of ion-colloid reactions important to pathologist and therapeutist. In connection with the subject of sulphocyanid ions, however, the warning should be given that whereas sulphocyanid may safely be administered in doses up to 1 gm. daily for sedative and analgesic, as well as pressure-lowering effect, yet any compound of the sulphocyanid ion with an ester will produce almost instant death, owing to the solubility of the cell lipoids in esters. In Pauli's experiments it seems strange to read that nitrate and acetate are ions inhibitive of precipitation, when we daily use nitric acid and acetic acid to precipitate albumin out of urine. But in acetic and nitric acids we have, according to the modern view, hydrogen acetate and hydrogen nitrate. Hydrogen is the cation, and if arranged in Pauli's series, should be placed as the strongest of all precipitants when ionized. Thus, too, we find acetic acid a more delicate test for albumin than nitric acid, because the acetate ion has less inhibiting power than the nitrate ion.

Dr. Alfred Stengel: Physical chemistry is a very new science, to the best informed a difficult and abstruse one, and one which those of us not technically interested in chemistry and physics can hardly hope to master even in its more elementary particulars. Practical physicians, however, should know something about the principles of physical chemistry and the newer principles of physics. Saline solutions are too often employed with the barest knowledge of the principles involved. The use of solutions of greater concentration than the solutions of the body will not bring about the desired results. The introduction of hypertonic solutions into the blood stream, as advised by some French clinicians, while carried out apparently without damage, is a questionable procedure. An argument in favor of physicians knowing something of the newer science is the principle of absorption in the combat against certain bacteria. This is demonstrated in the work of bacteriologists with fullers' earth in the treatment of local infections, in which it has proved of unquestionable value in the matter of diphtheria and typhoid carriers. By the administration of fullers' earth the bacteria have been removed in a way that chemical antiseptics are incapable of doing. Speculation arises in my mind whether or not the use of some of these insoluble substances may not act in the intestinal tract in this way. The work of Ehrlich comes closely on the topic of physical chemistry.

Dr. Thomas McCrae: It certainly behooves a clinician to tread warily when discussing the points brought before us tonight. One danger to which many of us are exposed, not only in respect to the application of physical chemistry, but also in other problems is that of picking up terms without learning their meaning. This subject of physical chemistry lends itself to that. It is easy to talk about ions and ionization without having a clear idea of what is meant; of colloids and crystalloids, without having any clear conception of their meaning. Ionization has a tremendous bearing on the bodily activities. Perhaps we are all familiar with the fact that ionization and electrolysis are closely connected. "Electrolysis puts life into the proteins." An interesting work is that done by Rogers in the giving of hypertonic solutions in the treatment of Asiatic cholera, in which his results justify the treatment. With Dr. Stengel I would emphasize the danger of introducing substances under the skin, one example being calcium lactate. The danger of such a method cannot be emphasized too strongly. In practical medicine we have a great deal to learn from physical chemistry. In speaking of colloids and crystalloids we must have some conception of what we are dealing with; must consider how much of the activity of our cells is due to difference in pressure. In clinical medicine we should do our best to make use of this knowledge, because it would lead us in many instances to a much more rational therapeusis.

Dr. Joseph Sailer: The subject illustrates, first of all, the sympathetic quality of the medical profession in that it must take toll of all the sciences for the understanding of disease and the welfare of the human race. The fundamental element in physics, in chemistry, and possibly the universe, is the atom; and it would seem that until we have a clear idea of the structure of the atom we could not go ahead in the solution of these problems. Until we have a clear conception of some of the problems of physics we are not at liberty to apply our methods with the idea that we are using a tremendous scientific advance in medicine. The application of definite facts of physical chemistry, however, is important, and as in the use of the Roentgen ray and all forms of radioactivity, must be carried out empirically before its value can be determined.

MEDICAL ASSOCIATION OF THE SOUTHWEST

Tenth Annual Meeting, held at Oklahoma City, Oct. 12-13, 1915

The President, Dr. J. D. Griffith, Kansas City, Mo., in the Chair

Psychic and Somatic Palsies Complicating Pregnancy

Dr. S. Grover Burnett, Kansas City, Mo.: A toxic palsy in the pregnant woman endangers her life, her mind and her physical well-being. Primiparas are seldom affected. An early abortion will prevent a complete attack. The pregnant state may slip something in the chemistry of metabolism, causing a toxic neural inflammation syndrome resembling that of Korsakoff's disease but differing in the acuteness of the toxemia, more often causing death by attacking the phrenics and pneumogastrics, and by the alcoholic etiology in Korsakoff's diseases, more chronic in character. The neural inflammation complicating pregnancy may be confined to a single nerve trunk, to one limb, to all the limbs including the trunk, the diaphragm, one or more of the cranial nerves, or the pneumogastric alone, causing death, or to the intercerebral structures, namely, the brain cells and their association nerves, causing only mental symptoms with or without delirium, minus fever. Severe and uncontrolled vomiting usually precedes a general paralysis. The vomiting is milder or absent in the mild or restricted palsies, indicating a severe or mild underlying toxemia, respectively. We must advise against a subsequent pregnancy when a previous hyperemesis gravidarum has occurred; the toxemia is apt to recur in intensified form.

DISCUSSION

Dr. G. W. Robinson, Kansas City, Mo.: I have had a patient under my care for ten days following pregnancy due to convulsions. If I had no history but examined that patient, I should say she has not Korsakoff's disease, but a multiple neuritis. She has hallucinations, both auditory and visual, with a confusional state. Psychoses resembling dementia praecox are not unusual. I have two such cases under my observation at the present time. All these cases are due to toxemia. There is reduced alkalinity of the blood, if not an acid condition. The best treatment is to decrease the alkalies and stimulate elimination by giving large quantities of fluid, a milk diet, and sodium bicarbonate in doses of 120 grains or more, two or three times a day. By means of this treatment I usually get good results.

Dr. G. W. Moody, San Antonio, Texas: It is difficult to determine the nature of the toxemia. It is not the ordinary toxemia which gives symptoms in other persons quite similar to some of the cases with lactation psychoses and neuroses. It could not be the cause because these patients do not eat much and frequently vomit what they do eat. It is in those cases attended with the vomiting of pregnancy that complications are more likely to occur; nevertheless it is a toxic condition.

The Early Pathologic Changes and Their Relationship to the Clinical Symptoms and Physical Signs in Pulmonary Tuberculosis

DR. FRANCIS M. POTTENGER, Monrovia, Calif.: Pulmonary tuberculosis, as it affects the apex of the lung, is a metastatic infection coming from a focus which may be far distant in other parts of the body. This primary focus is commonly found in the peribronchial glands, but may be in other glands, such as the cervical and mesenteric. Often the pulmonary lesion is a renewed activity in an old focus. Under these circumstances we have different conditions present. First, as a result of the old chronic process, there is a degeneration of the muscles, skin and subcutaneous tissue, and, second, increased tone (spasm) in the muscles. If the wasting of the muscles has not been marked, the increased tone may be greater than normal; but if it is marked, the increased tone may not be detectable. Consequently, if we find on inspection and palpation that the muscles are wasted and smaller than usual and that they have an increased tone, and, especially, if we find that not only the muscles but also the subcutaneous tissue has degenerated and is not so marked as on the other side of the chest, then we are led to believe that we are not dealing entirely with a new lesion in the lung but with renewed activity in an old process.

Sometimes we are called on to determine whether an increased tone is due to hypertrophy from overwork or to a motor reflex. This can be determined in the following way: If the increased tone be due to overwork, it is most apt to affect the trapezius, levator anguli scapulae and pectoralis, and sometimes the rhomboidei. If it be due to motor reflex from the lung, the sternocleidomastoideus as well as these other muscles will be involved. In fact, the increased tone will show best, if the lesion be near the apex, in the sternocleidomastoideus, trapezius and levator anguli scapulae. When there is sufficient irritation to affect the apical muscles, the spasm also shows in the diaphragm in the form of a deficient motility. An increased tone of the apical muscles, particularly when the sternocleidomastoideus is involved, plus a lagging of the side, practically always means a motor reflex from the inflammation in the lung.

DISCUSSION

DR. L. G. MOORMAN, Oklahoma City: We must diagnose pulmonary tuberculosis early. Headache is a great aid in making an early diagnosis. We should remember the symptoms that arise from toxins produced by the tuberculous infection, such as malaise, lack of endurance, indigestion, loss of weight, increased pulse rate, night sweats, elevation of temperature, and apparent anemia. There is an apparent anemia in tuberculosis.

DR. F. W. FROEHLING, Kansas City, Mo.: I have seen real cases of apparent anemia in which I was compelled to assume that the patients in question had really too little blood. The quantity was too little, but the constancy of that quantity was all right. A great deal of reflex action is the cause of these apparent anemias.

Caudal Anesthesia (Analgesia) in Genito-Urinary Surgery

DR. BRANSFORD LEWIS and DR. LEO BARTELS, St. Louis: The chief advantages of caudal anesthesia are extreme safety and absence of unpleasant or dangerous after-effects, as nausea, vomiting, pneumonia, etc. It has enabled us to operate with comparative safety on a class of patients in whom the risk of using general anesthesia would have been too great. Caudal analgesia is also very convenient to use in the office for painful cystoscopies, painful vaginal examinations, etc., and patients are able to go to their homes immediately afterward. Prostatectomy is relieved of one of its greatest objections. The patient goes through the operation without shock, without nausea or vomiting, and without menace to heart or lungs, and is as comfortable after its performance as he has been before it.

DISCUSSION

DR. JULIUS FRISCHER, Kansas City, Mo.: In my experience with spinal analgesia, I have noticed that patients would have headaches following it, and I have tried to relieve this pain by placing three or four pillows underneath the patient's head, and bolstering him up in bed in a half sitting posture. The danger from spinal analgesia is respiratory or heart failure.

DR. WILLIAM J. WALLACE, Oklahoma City: My experience with spinal analgesia has been limited to one case in which I did a perineal prostatectomy successfully.

DR. J. D. GRIFFITH, Kansas City, Mo.: Several years ago I used spinal anesthesia, not caudal, in seventy-two patients whose pathologic conditions were below the umbilicus. I have tried to use it in dealing with pathologic conditions above the umbilicus, but have failed. The last patient manifested disturbances of the nervous system which she had not shown before. The operation was done for the removal of pus tubes. I made up my mind I would quit spinal anesthesia.

DR. CLIFFORD C. NESSELRODE, Kansas City, Kan.: A few years ago spinal anesthesia was quite popular in the Kansas City General Hospital. It was resorted to in the case of a woman for the removal of an ingrowing toe-nail. She had complete paralysis of the bowels and rectum following its administration, and so far as could be determined at the time it was likely to be permanent.

DR. LEO BARTELS, St. Louis: As far as the danger of caudal analgesia is concerned, there is no more danger from it than from ordinary infiltration anesthesia. There is no connection between spinal anesthesia and caudal analgesia. We do not enter the spinal canal. If we should accidently enter the spinal canal, we can withdraw the needle and change its direction, and wait three or four minutes before we make the other injection, giving the opening time to close of its own accord. Spinal anesthesia is the most dangerous of all methods of producing anesthesia, including chloroform.

Dietetic Treatment of Pellagra

DR. J. LEWIS DAY, Normal, Okla.: Our most successful form of treatment has been dietetic. We have fed our pellagra patients on a diet rich in animal proteins and low in carbohydrates. This has been done regardless of diarrhea or stomatitis. We do not believe that any patient with diarrhea has been made worse by this diet. When a patient is first admitted, castor oil is administered, and then the diet is instituted. Many patients have given a history of having existed on liquid diet for six or eight weeks with progressive weakness and increasing severity of all symptoms. We place such patients on the above-mentioned diet with almost immediate improvement. Patients sleep in the open air when possible, and they are permitted to lie down a few hours each day. We do not allow them to sit in the bright sunlight, but our experience does not show that the ordinary daylight has any bad effect on the skin lesions. Seasons of the year have seemingly little to do with the progress of the disease, except that during extremely hot weather the response to treatment is slower.

What Are We Doing and What Should We Do for the Feebleminded?

DR. W. L. KENDALL, Enid, Okla.: A careful study into the causes of feeblemindedness has shown that it is very largely hereditary, at least two thirds of the cases being the children of feebleminded parents or grandparents or both. Colonization appears to be the ideal method. Under the compulsory education law, all children now come to public attention when they enter school. Placed in colonies, which are in reality well-regulated communities, where all these people do all the work that they are capable of doing, and live under conditions that are easy for them, the problem becomes simplified by the persons of intelligence who manage the colony, and these children become happy and harmless. A great many of them can be trained to do many things with their hands. They can carry on much of the work of the colony and become partially self-supporting, or even completely self-supporting under direction. The hygiene of the backward child, then, includes the recognition of his condition and the treating of him in accordance with his mental capacity.

(To be continued)

INDIANA STATE MEDICAL ASSOCIATION

Annual Meeting, held in Indianapolis, September 22-24, 1915

(*Concluded from p. 1578*)

Thoracoplasty for Chronic Empyema

Dr. W. D. Gatch, Indianapolis: The first point to determine in any patient having a chronic empyema, which has been thoroughly drained, is whether the lung is capable of expansion if freed from scar tissue. To discover this I rely on (1) the amount of uncollapsed lung as determined by stereoscopic roentgenograms; (2) the size of the cavity; (3) the presence of curvature of the spine and overlapping of the ribs; (4) the level of the diaphragm. If there is no uncollapsed lung, if the cavity is small, the diaphragm in a high position, the spine curved with its concavity toward the affected side, and if the ribs overlap one another or are close together, then I assume that any effort to bring about expansion of the lung is hopeless. The problem involved in the treatment is the obliteration of an infected cavity which is surrounded by rigid and poorly vascularized walls. The cure is to be accomplished by cutting away the firm walls on at least three sides and applying pliable structures with a good blood supply to the remaining wall. The very chronic cases can mostly be cured, barring the presence of bronchial fistula, providing the operation is thoroughgoing.

Some Surgical Disorders of the Upper End of the Femur

Dr. B. P. Weaver, Fort Wayne: Bone tuberculosis in the adult, involving as it often does the synovia and hip joint, demands radical treatment, which means resection to the point of removing just enough of the ends of the bones to secure apposition of bare bone to bare bone, producing an ankylosis. It is both needless and futile to attempt to remove all the tuberculous tissue, for once the function is arrested cure will follow in the average case under proper hygiene. The hypertrophied form, which may cause bony irregularities which interfere very materially with motion, offers an ideal condition for the application of Murphy's hip-joint arthroplasty, wherein the lip, if present, could be removed, the acetabulum reamed out, the irregular head properly rounded off with the end-mill, and recurrence prevented by the interposition of fascia-lata flap. Carcinoma of the upper end of the femur is practically always secondary to cancer in some other part of the body, chief among which are the prostate, thyroid and mammary glands, stomach, esophagus and uterus.

Uronephrosis

Dr. H. O. Mertz, Laporte: By uronephrosis I mean retention of urine in the upper urinary tract. Our experience with these cases seems to emphasize the fact that this condition should be recognized early, when constructive surgery may still suffice. Urine analysis is of very little value in these cases, and too much reliance on the pain symptom alone will often lead us astray in diagnosis. Pyelography has a definite field of usefulness early in the condition, but when end pathology is present it is seldom necessary or justifiable. Extreme care must be exercised at operation in interpreting lesions of the upper ureter producing stasis.

DISCUSSION

Dr. H. G. Hamer, Indianapolis: I would like to emphasize the importance of thorough and complete diagnosis in these cases. It is by making use of the cystoscope, ureter catheter, Roentgen-ray and function tests that we can obtain the information for a complete diagnosis. The neutral solution of thorium nitrate and sodium citrate is an excellent solution for pyelography. It is a clear, clean solution which flows readily through the catheter, is said to be nontoxic and nonirritating, the cost is small, and the shadows are much clearer than those obtained by the use of collargol or other solutions.

Dr. P. E. McCown, Indianapolis: It is better to point the way to a diagnosis of uronephrosis before such a condition arises. We should look into the bladder and kidney pelvis earlier in all abdominal conditions.

Diseases of the Gallbladder and Their Influence on Adjacent Organs

Dr. W. H. Williams, Lebanon: The readiness with which a toxic myocarditis or a chronic pancreatitis or the various symptoms of an infective cholangitis yield to prolonged drainage of the gallbladder is extremely gratifying to both patient and physician. The dissolving of gallstones by various remedies for which such claims are made is misleading, for they do not do the work claimed for them and valuable time is lost. All cases of gallbladder disease are not surgical, but they are medical first and continue so as long as we are getting rapid improvement, free from complications and recurrence of attacks; but if the latter is true we should urge surgical interference without delay.

DISCUSSION

Dr. Murray Hadley, Indianapolis: In regard to the source of gallbladder infection, two theories deserve consideration—that the gallbladder becomes infected by the bile which in turn was infected within the liver; or the gallbladder is infected by way of the lymph stream. The point of infection may be at a distance and the bacteria find their way to the lymph stream by the lymph channels within the organ. If the gallbladder is infected by the bile or by an ascending infection, we have a mucous membrane which will permit the organism through it. Perhaps the most interesting part of gallbladder surgery is the number of cases in which on operating we do not find stones.

Dr. Joseph Weinstein, Terre Haute: A gallbladder sufficiently diseased to produce symptoms that can be diagnosed, is a surgical condition. We are only justified in medical treatment after acquainting our patients with the possibilities and probabilities and their refusal to follow our advice.

Dr. Charles Stoltz, South Bend: When you have made a positive diagnosis of gallbladder disease, operate. By surgical treatment of these cases we are not groping in the dark; medically, we are.

Dr. E. H. Griswold, Peru: We are attributing the cause to the disease and not the disease to the cause. The question cannot always be answered by symptoms, for symptoms are conflicting. We get the cart before the horse when we lay the matter of gallstones at the door of an infected gallbladder.

Dr. Vincent A. Lapenta, Indianapolis: Gastric infections follow all lesions. Drain the gallbladder, but inspect the pylorus too—and we will have to operate less often. We are getting too far away from the idea that the stomach itself is the cause of disease.

Some Considerations in Pelvic Floor Work in Women

Dr. W. H. Baker, South Bend: The pelvic floor work of improved methods is not relieving as many of our patients as it should because of the neglect of frequent complications producing like symptoms. The round ligaments retard motion but do not hold the uterus in a forward position. The lower pole of the uterus must be mobilized in prolapsus uteri and retroversion. No operation should be done on the child-bearing woman that would retard the normal motion of that organ. Perineal muscles should be stitched only with their fascia covering included in the stitch, and the sutures should be of absorbable material and protected as far as possible from vaginal discharges by an unbroken vaginal mucous membrane. In all this work a thorough knowledge of the anatomy and physiology is most important.

DISCUSSION

Dr. G. G. Eckhart, Marion: If the levator ani muscle, the perineal and rectal fascia, make the lower floor, and the uterosacral and uteropubic fascia and the uterus and its attachments make the upper floor of the pelvis, then the shortening of the round ligaments along for retrodisplacement will not suffice. If the uterus has been heavy over a long period of time, backward displaced, shortening the round ligaments and rest in bed for the increased weight may give complete relief. No doubt the largest percentage of failures in pelvic floor work are reported in cases where future pregnancy is to be reckoned with.

DR. GOETHE LINK, Indianapolis: Prevention is better than cure. If compensation for obstetrics were better, physicians could spend more time in making deliveries and could more often use professional assistants. There would then be fewer bad tears. A torn perineum can be made almost as good as new at the primary repair, but it is an operation requiring skilful work, good assistance and favorable surroundings. We have too many named operations on the perineum and not enough anatomy. All our efforts should be toward the restoration of normal anatomy and one pathologic condition should be replaced by another.

The Modern Conception of One Form of Nephritis

DR. CHARLES P. EMERSON, Indianapolis: Bright's disease is a term used correctly only when applied to the small, white, contracted, gouty kidney. The majority of cases of progressive nephritis are due to acute infectious diseases, but the disease will stop unless the infections repeat themselves. The pathologic lesion is due not to one infection, but to many; not to one trauma but to many. One of the most important recent advances is the demonstration that the kidney is capable of some regeneration of its specific elements if only the injurious agent producing the lesion stops its activity. In the diagnosis of nephritis the results of the urine examination must be interpreted by the history and physical examination of the patient. I feel that in no small degree the present chaos in our ideas of nephritis is the result of the separation of the laboratory examination of the urine and the physical examination of the patient. Examine the urine of patients more carefully, especially those who are only "neurasthenic"; have more blood cultures made even though the urine be normal, and if the patient's urine contains albumin, casts or both, allow the laryngologist, the dentist and the surgeon to do all they can for your patient before you subject him to the medicinal and dietetic care of chronic nephritis.

Toxemias of Pregnancy

DR. CHARLES E. FERGUSON, Indianapolis: The preventive and curative treatment of nephritis and preeclamptic toxemias are identical. Were women trained to put themselves under the care of a physician in the early weeks of pregnancy, the prompt diagnosis of toxemia would be simplified. So long as expectant mothers get no more care than that given by the midwife, or often not as much as that given to a valuable domestic animal under like circumstances, women will die and doctors will struggle with eclampsia and uremia that should have been anticipated and in most cases prevented. The urine of pregnant women should be examined for sugar and albumin every few weeks during the first six months and every three weeks during the last three months. The blood pressure should be taken from time to time; every patient should be impressed with the significance of dimness of vision, spots before the eyes, and particularly severe pains in the epigastrium. While it is true that eclampsia sometimes develops during labor without warning, the majority of cases reveal neglect of preeclamptic toxemia.

DISCUSSION

DR. H. A. DUEMLING, Fort Wayne: I would like to emphasize two points—one is the importance of careful and thorough examination of the pregnant woman long before her anticipated confinement becomes due; the second is the looking for perineal tears. Physicians are in too much of a hurry, and consequently their patients are brought back to the hospitals, where they are helped, but never brought to the health they could have had the tears been taken care of at the proper time.

DR. A. S. JAEGER, Indianapolis: The best way to prevent eclampsia is to treat it before it occurs, which can be done by the general practitioner. The men who see these cases only when some imperative emergency exists have not a chance to do anything except that which can be done at once.

If a woman is in eclampsia at term, then my custom is to deliver as rapidly as possible. If she has no pulse and a rigid os, I do the cesarean section. If eclampsia comes at seven or eight months, I believe everything should be done to carry these women to term. The use of high forceps is criminal if used on an unengaged head, especially when the cesarean section can be done, saving the mother and child.

Case of Hysteria from the Viewpoint of the Freudian Psychology

DR. MAX A. BAHR, Indianapolis: Hysteria is a psychosis and not a neurosis. The psychology of hysteria is the psychology of subconscious states and their method of growth by a process of dissociation of the normal consciousness. These subconscious impressions still remain dynamic, however, in the life of the individual, and later acquire strength to dominate the entire personality. These so-called "submerged complexes" are capable of being revealed by means of association experiments and analysis of reveries and dreams. New complexes by themselves have influence only in so far as they are indissolubly bound up with emotions of painful content, consequently they become dynamogenic and when sufficient energy has been accumulated to overcome the resistance an explosion takes place and the result is the conversion of these complexes into crises such as we find in hysteria. We have violent outbursts of excitement, transient deliriums, and a multitude of other sensory and motor expressions—in fact there is hardly a symptom in the category of medicine, be it mental or physical, which may not present itself at one time or another in hysteria. The patient's dreams are symbolic of an inherent trend of the inner life of the individual. Psychic phenomena have efficient causes and are as definitely associated with these causes as are physical diseases. The technic of psychanalysis is to establish necessary and definite connection between these symptoms and the exciting causes. The methods employed vary with the individual needs, but the most satisfactory resources at our disposal are association tests and analysis of dreams. The association tests give us a ready method of gaining insight into the various complexes as well as a survey of the patient's general psychologic trend, while through analysis of dreams it is possible to enter the various crypts of the unconscious mind and bring to light many of the repressed and hidden experiences. The principle of analytic psychotherapy is to overcome mental conflict and make the patient realize the existence and influence of these unconscious and self-condemned desires. This psychanalysis cures patients as a result of self-knowledge and ascertaining the cause, although the method of treatment does not alter the neurotic inheritance which nearly all these patients possess. When the principles of this new psychology are more extensively known by the general medical practitioner, hysteria will rapidly decrease in frequency, for it is the general practitioner who is the first to come in touch with these patients.

DISCUSSION

DR. ERNEST H. LINDLEY, Bloomington: The emotions are the most vital diagnostic features. Ideas move the world, but they never move anything until the emotions get behind them and furnish the steam. The balking of emotion, the prevention of emotion finding its normal expression, is not infrequently the source of functional disorder, and where people live in repression they live at war with themselves, and this finds expression in convulsions and all kinds of physical disorders and excesses. The great bulk of nervous cases with which the physician has to deal are cases of balked desires, and the way out is to find normal expression for the emotions of these people. Give them something to do, something worth while for themselves and the community, and you cure them and at the same time give them their rightful place in society.

DR. ALBERT E. STERNE, Indianapolis: Mind cannot exist independent of matter. The mind unquestionably influences the body, and it can influence our emotions. The most recent experiments indicate that the emotions are physical, that they are biochemical and that their results are as manifest and as definite as any organic clinical entity that we can demonstrate in organs outside of the nervous system and the mind which is its expression. To apply psychanalysis wholesale as a method of procedure would be wholly impracticable,

not because of lack of ability on the part of the physician, but on account of lack of time and patience to do it. There is danger in psychanalysis applied irrelevantly, as there is danger in any other thing applied irrelevantly. The whole question may be summed up in the one word—self-control. Teach boys and girls self-control—to recognize that the two fundamental principles which guide all animal creation are alive in us and need control, and we will not have many cases of hysteria. It is the individuals who do not exercise self-control that we meet with in the realm of hysteria.

Dr. C. F. Neu, Indianapolis: Psychanalysis has come to stay, but it is not a "cure-all." We get temporary cures, but psychanalysis has not been in application long enough to say whether we get permanent cures or not. This analysis can only be carried out properly in the proper environment and with the proper attention, and that practically can only be obtained in institutional treatment.

Diagnostic Routine in General Practice

Dr. Charles R. Bird, Greensburg: The diagnosis of disease rests on three things: clinical history, physical signs and pathologic knowledge. In addition to noting the pulse, temperature, reflexes, etc., each patient has a right to expect of us a routine which includes nothing less than case history and case record, stripping to the skin, examination of chest and abdomen, urinalysis, blood pressure and hemoglobin percentage. It is not sufficient that we look for some definite pathologic lesion only when we suspect its presence.

DISCUSSION

Dr. William R. Davidson, Evansville: Too many doctors say they have not time to make examinations, but if we practice systematic routine in all examinations, beginning with the head and in an orderly, systematic manner going through the entire physical findings, particularly taking a full clinical history and writing it down, we will be surprised how much more accurate knowledge is becoming. We must first know the pathology and then know how to interpret that with the clinical history, for when all is said and done the main thing is the clinical history of the patient.

Dr. A. C. Kimberlin, Indianapolis: Get the facts from the patient first, which is the history, and then get what evidence you can from physical examination, before you prejudice yourself mentally, because there is where we make our errors most frequently—in following a line and keeping after it, even at the expense of putting aside something which another person sees in a different light. It is not a matter of what we know, but how we use our knowledge.

Dr. C. S. Bond, Richmond: A man cannot be a diagnostician unless he trains for that work—training his finger tips, his eyes and his ears. I believe the difference between men very largely is the difference in their ability to detect things by hearing, seeing and feeling. Then a man must take time and quietly consider his findings.

Dr. W. A. Fankboner, Marion: We are prone in recent years to lean on the test tube and microscope and blood count and things of that kind. I would not detract from the value of these things, but we must learn primarily to study the patient as a human machine and apply our educated senses to finding out what is the matter with him, using these laboratory methods in a corroborative rather than a primary way. Our success in diagnosis depends on our faculty in interpreting things at their full value.

Benzol in the Treatment of Leukemia

Dr. Joseph M. Barry and Dr. Jane M. Ketcham, Indianapolis: From a study of the literature and from our experience with one case we feel justified in concluding that benzol has a wonderfully selective action in chronic myeloid leukemia, if uncomplicated and not of too long duration; that one can count with considerable assurance on getting a rapid reduction in the number of leukocytes; on getting a normal blood formula; a rapid diminution in the size of the spleen; and an increase in the number of red cells and the hemoglobin percentage, with improvement in the general health of the patient, increase in weight, etc. One should never forget, however, that the drug is a powerful poison and that we must be careful not to carry its effects too far. The patient should be in a hospital, in bed; the gastro-intestinal tract, kidneys and liver should be watched carefully for toxic symptoms; blood counts should be made every few days; the benzol should not be increased in dosage without definite warrant, and its administration should be entirely stopped considerably before the white count has returned to normal.

DISCUSSION

Dr. A. C. Kimberlin, Indianapolis: In the treatment of these cases, the essential point is to be familiar with the temperature curves before beginning active treatment. In the Roentgen-ray treatment we should approach the spleen with care, and feel our way, marking our progress by the temperature, by the pulse and by specially close attention to the mucous membrane of the throat, especially of the tonsils. They have a tendency to take on hydroplastic conditions. Rise of temperature should always be taken into account.

Some Points in the Early Physical Diagnosis of Pulmonary Tuberculosis

Dr. A. C. Kimberlin, Indianapolis: When a case presents the only interest I have is, first, to make a diagnosis; next, if possible, to locate the lesion accurately. Family history is important. Do not take the word of the average patient as to a negative family history of tuberculosis—it is not worth anything. The physical examination is worth just about what one's services are, and that is what you are willing to make it. The first thing one should know in attempting this diagnosis is the anatomy of the chest; next, he shou'd carry a clear picture in his mind of the manner in which pulmonary tuberculosis spreads; then he must know something of the acoustics of a normal chest as well as the pathology of early pulmonary tuberculosis. Percussion and auscultation are our chief and most reliable means of recognizing incipient pulmonary tuberculosis, but auscultation of the voice is of much greater value than ordinarily appreciated, especially if properly practiced and studied. During examination the patient should be at ease, both mentally and physically. He should sit at ease on a chair high enough to bring him on a level with the examiner, or in examining the axillary and subpectoral regions he should lie on a firm table, not a bed or couch with springs under it. We owe an everlasting debt to the roentgenologist for what he can and has done in helping us in our findings, and because he has been our "pace-maker" in teaching the possibilities of a properly made and refined physical diagnosis; but when a physical examiner applies himself, keeping his mind fully concentrated on what he is doing, eliminating all traditional customs of routine physical examination, he is quite able, with the advantage of personal and family history and a thorough clinical history, to arrive at conclusions which are of more practical value to the medical man than would be the findings of the roentgenologist, who only studies a picture showing change in density. A physical examination should be intelligent and conclusive and it should be reliable. One objective sign in diagnosing is worth a dozen subjective symptoms. What a patient tells you may be wrong, but what you find from physical examination, you are responsible for its interpretation and application.

DISCUSSION

Dr. Alfred Henry, Indianapolis: Early diagnosis of pulmonary tuberculosis entails great responsibility on the family physician. You had better say to your patient "You have tuberculosis" if you are in doubt, than to say "You have not tuberculosis." If you err it had better be on the other side. If he has tuberculosis he will do something to cure himself, and if he has not, what has he lost by sleeping out doors or with his windows open for a year? One of the landmarks in this diagnosis is the characteristic tired feeling. If that persists for a few weeks or for a month or two, be suspicious. Take your time; give each patient a half hour to an hour instead of a minute; take the temperature a dozen times, examine the sputum a dozen times, and train your ear to hear.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

November, XXXIX, No. 1, pp. 1-130

1 *Physiology of Stomach. Mechanism of Regurgitation of Duodenal Contents into Stomach. C. J. Hicks, Jr., and J. W. Visher, Chicago.
2 *Origin of Proteolytic Ferments of Blood. Question of Specific Character of Certain Ferments. L. H. Sloan, Chicago.
3 Oxygen and Carbon Dioxid Content of Blood During Hibernation in Woodchuck (Marmota Monax). A. T. Rasmussen.
4 Blood Counts in Frog, Turtle and Twelve Different Species of Mammals. J. J. Wells and J. E. Sutton, Jr., Ithaca, N. Y.
5 *Influence of Oil of Chenopodium on Intestinal Contractility. W. Salant and C. W. Mitchell, Washington, D. C.
6 *Influence of Stimulation of Depressor Nerve on Suprarenal Secretion. A. N. Richards and W. G. Wood, Philadelphia.
7 Respiratory Chamber for Small Animals. A. C. Kolls and A. S. Loevenhart, Madison, Wis.
8 *Mechanism Adapting Oxygen Capacity of Blood to Requirements of Tissues. H. C. Dallwig, A. C. Kolls and A. S. Loevenhart, Madison, Wis.
9 *Stimulation of Hypophysis in Dogs. R. W. Keeton and F. C. Becht, Chicago.
10 Physiology of Stomach. Gastric Hunger Contractions of Normal and Decerebrate Guinea-Pig. J. L. King and H. Connet, Chicago.

1. **Regurgitation of Duodenal Contents into Stomach.**—One hundred and fifty c.c., 0.5 per cent., HCl left in dogs' stomachs for fifteen and thirty minutes caused regurgitation in 38 per cent. of fifty-six trials. In man, an average of 32.6 c.c. gastric juice (acidity 0.411 per cent.) accumulated during twenty minutes' chewing of food, caused regurgitation in 40 per cent. of ten trials. Whereas, 100 c.c. of 0.4 per cent. HCl retained in stomach for twenty minutes caused no regurgitation in 100 per cent. of ten other cases. Duodenal regurgitation following the introduction of 0.5 per cent. HCl into the cat's stomach is effected by means of characteristic movements (mostly "rhythmic pulsations" or "segmentation movements") in the first portion of the duodenum, initiated by the passage of strong HCl into the duodenum, and occurring in the absence of extrinsic nervous connections. Regurgitation never occurred in the absence of these movements. Hicks and Visher claim that antiperistalsis of the duodenum is not concerned in this regurgitation.

2. **Origin of Proteolytic Ferments of Blood.**—There is an increased proteolytic ferment action of the blood serum during pregnancy. Sloan believes that this increased activity is probably in the main due to an increase in the polyvalent ferments. Normal blood serum has a weak nonspecific proteolytic action. The dialysis method of Abderhalden or the method of Williams and Pearce does not suffice to demonstrate a ferment developed during pregnancy acting only on placental protein. Many advanced pathologic conditions give a positive reaction within the time specified for the Abderhalden test of pregnancy. At present the Abderhalden test is a quantitative not a qualitative test.

5. **Influence of Oil of Chenopodium on Intestine.**—According to Salant and Mitchell, oil of chenopodium in dilutions of 1:5,000 and 1:10,000 in Locke's solution produces in the isolated intestine of rabbits a marked decrease of tone which remains permanent and diminishes frequency as well as force of contractions, which disappeared altogether in twenty to twenty-five minutes. Recovery occurred when the intestinal segments were placed in Locke's solution without oil of chenopodium. In carnivorous animals, oil of chenopodium usually, but not always, causes a preliminary rise of tone followed by a steady decline. Rhythmic contractions may increase in frequency, but disappear finally. Recovery may take place when the segments are put into Locke's solution. The reaction to oil of chenopodium was greater in the ileum than in the duodenum or jejunum, but was most marked in the colon. Caffein has no antagonistic effect, but may, on the contrary, aid depression of tone caused by oil of chenopodium. Neither barium chlorid nor pilocarpin has a true antagonistic effect, but may prevent to a small extent depression of tone when added before oil of chenopodium. Pilocarpin has no action on intestine which has been poisoned by oil of chenopodium, but barium produces an increase of tone. Nerve ends as well as muscle fiber are attacked by oil of chenopodium, but the latter is more resistant. Relatively large doses of oil of chenopodium are required to inhibit peristalsis in intact rabbits by intravenous injection. The presence of substances antagonistic to oil of chenopodium is offered as an explanation.

6. **Influence of Depressor Nerve on Suprarenal Secretion.**—Richards and Wood are convinced that the processes in the suprarenal gland which are responsible for the discharge of epinephrin into the blood are subject to reflex inhibition by way of the depressor nerves; in a word, the mechanism of suprarenal secretion is involved, not only in pressor, but in depressor reflexes.

8. **Mechanism Adapting Oxygen Capacity of Blood.**—The work done by the authors indicates that the increase in erythrocytes and hemoglobin noted by practically all workers at high altitudes is due largely if not entirely to the decreased partial pressure of oxygen at high altitude, but the rapid increases in the blood counts noted in man at high altitude and also the increases noted at comparatively slight elevations is not explained by them.

9. **Stimulation of Hypophysis in Dogs.**—Keeton and Becht found that electric stimulation of the hypophysis in dogs under insufflation anesthesia gives rise to an increase in the reducing substances in the blood. Drilling over the sella stimulates the gland mechanically, but not so efficiently as the induced shocks. If the stimulation is applied anteriorly or posteriorly to the gland, with precautions to prevent an escape of the current to the hypophysis, no rise in the reducing substances results. This rise on stimulating the gland does not occur in dogs whose splanchnic nerves have been previously sectioned, a fact which argues against the liberation of a hormone, which increases directly the cellular glycogenolysis. With active diuresis the threshold of glycosuria lies between 0.19 per cent. and 0.21 per cent. reducing power of the blood figured to dextrose. Once established, the sugar in the urine increases in concentration out of proportion to the reducing power of the blood.

American Journal of Public Health, Boston

October, V, No. 10, pp. 965-1102

11 Recent Public Health Work in United States Especially in Relation to Infant Mortality. J. S. Neff, Narberth, Pa.
12 Municipal Control of Diphtheria. W. G. McKay, Jacksonville, Fla.
13 Permanent Sediment Records for Water and Sewage. G. C. Whipple and J. W. M. Bunker, Boston.
14 Statistical Study of Whooping Cough. F. S. Crum.
15 Important Details of Practical Plumbing. H. Y. Carson, New York.
16 Standardization of Public Health Work. W. S. Rankin, Raleigh, N. C.
17 Incubation Time in Culture Diagnosis of Diphtheria. A. Gehrmann, Chicago.
18 Apparatus for Accurately Filling Dilution Blanks. R. Freas, Baltimore.
19 Outbreak of Cowpox. A. J. Douglas, Winnipeg, Canada.
20 Rural Sanitation and Uncinaria Disease. A. G. Fort, Atlanta, Ga.
21 Standard Certificate of Birth. W. A. Plecker, Richmond, Va.
22 Action of Certain Bacteria on Nitrogenous Material of Sewage. E. G. Birge, Boston.
22 Preparation of Ammonia-Free Water. E. J. Pugh, Philadelphia.
24 Report of Committee on Industrial Hygiene and Sanitation of Home. J. H. Landis, Cincinnati.
25 Report of Committee on Occupational Mortality. W. F. Snow, Sacramento, Calif.
26 Incorrigible Consumptive—Isolation of Persons Ill with Communicable Diseases. C. Bryant, Haverhill.
27 Some Inconsistencies in Dealing with Tuberculosis. F. G. Curtis, Newton.

Annals of Otology, Rhinology and Laryngology, St. Louis

June, XXIV, No. 2, pp. 393-428

28 Oral Tuberculosis. T. E. Carmody, Denver.
29 Sinister Unrecorded Anomalies of Sphenoid. A. W. Meyer, Palo Alto, Calif.
30 Pollen Therapy in Hay-Fever. J. L. Goodale, Boston.
31 Experiments with Autoserum in Treatment of Hay-Fever. Relation of Anaphylaxis and Eosinophilia to Hay-Fever. H. Hays New York.
32 Accidental Pneumothorax During Tracheotomy; Report of Case. S. Iglauer, Cincinnati.

33 Simple Manometric Apparatus for Measuring Eustachian Tubal Patency and Tympanic Ossicular Mobility. L. M. Hubby, New York.
34 Accidental Injuries of Sigmoid Sinus Inflicted in Simple Mastoidectomy. W. A. Scraton, New York.
35 Ethmoidal Exenteration. C. M. Robertson, Chicago.
36 Use of Pituitary Extract as Coagulant in Surgery of Nose and Throat. H. Kahn and L. E. Gordon, Chicago.
37 Tuberculosis of Larynx. J. Holinger, Chicago.
38 Choanal Fibroma. N. H. Pierce, Chicago.
39 Hammond's Mastoid Skin Grafting. F. Allport and A. S. Rochester, Chicago.

Boston Medical and Surgical Journal

November 4, CLXXIII, No. 19, pp. 685-722

40 Medicine; Profession or Trade. H. Cabot, Boston.
41 *Late Results of Operations on Hip Joints for Hypertrophic Arthritis. E. G. Brackett and H. W. Marshall, Boston.
42 Therapeutic Value of Injections of Whole Blood. J. S. Davis, Dallas, Tex.
43 Massage and Remedial Exercises in Treatment of Children's Paralyses; Their Differentiation in Use. J. M. Colby, Boston.
44 Treatment of Acute Infections of Airways by Instillation of Aromatic Drugs. I. W. Voorhees, New York.
45 Studies in Speech Disorder. W. B. Swift, Boston.
46 Case of Thrombophlebitis of Veins of Cord Associated with Colon Bacillus Infection of Epididymis. E. G. Crabtree, Boston.

41. **Operations on Hip Joints for Hypertrophic Arthritis.**—The nine cases reported by Brackett and Marshall represent four arthrodeses, one decapitation of the femoral head, three cheilotomies and one arthrotomy for a loose body. Results of the four arthrodeses are as follows: Three patients were actively at work at the time the last observation was made on them and the fourth person was improved in health. The result of the decapitation of the femoral head represented some improvement. The three cases in which diffuse exostoses and bony lips were removed from hip joints (cheilotomies) varied considerably in their success. One, a teamster, was at work two years and ten months after operation, having begun again seven or eight months after leaving the hospital. The other two patients had both hips operated on, and neither had resumed his former occupation. One of the two could chore around home and did not need a cane except in the street. The third cheilotomy patient was operated on twice and walked with a crutch and a cane seven years after his first operation. At the last observation he was in fairly good general health with much less hip pain. The first joint treated was still quite serviceable, while the second one was neglected by him in its after care, so that it was badly rotated outward at the last examination. This case, the oldest of the series, originally had marked changes in both hips and had been disabled for two years. His efficiency was increased by surgery, but not to the point of work, and the main benefit has been relief from pain. The one case of arthrotomy for removal of a loose body in the joint probably had a traumatic origin, and at operation the joint did not show many other pathologic changes. Complete relief followed removal of this body, and the patient could walk easily and painlessly when seen after two years and one month.

Canadian Medical Association Journal, Toronto

October, V, No. 10, pp. 853-948

47 Disabilities, Including Injuries Caused by Bullets, Shrapnel, High Explosives, etc. A. Primrose, Edinburgh.
48 Nonmaterialism in Medicine. D. F. Harris, Halifax.
49 Case of Large Celled Splenomegaly (Gaucher Type). H. A. Bruce and O. R. Mabee, Toronto.
50 Subcutaneous Administration of Fluid in Acute and Subacute Conditions in Infancy. R. P. Smith, Toronto.
51 Method of Dealing with Tuberculosis in Public Schools of Toronto. F. S. Minns, Toronto.
52 Cholemic Hemorrhage. E. M. Von Eberts, Montreal.
53 Typhoid Cholelithiasis and Cholecystitis. E. M. Von Eberts, Montreal.

Florida Medical Association Journal, Jacksonville

October, II, No. 4, pp. 97-128

54 Reflections on Modern Methods of Treatment by Serums and Vaccines. W. S. Thayer, Baltimore.
55 Composite Board of Medical Examiners. R. H. McGinnis, Jacksonville.
56 Plea for Better Health Organizations in Smaller Municipalities of Florida. M. E. Heck, St. Augustine.
57 Some Thoughts on School Inspection. D. C. Main, Welaka.

Journal of Experimental Medicine, Lancastar, Pa.

November, XXII, No. 5, pp. 517-673

58 *Chemopathologic Studies with Compounds of Arsenic. Types of Arsenic Kidney. L. Pearce and W. H. Brown, New York.
59 *Id. Histologic Changes in Arsenic Kidneys. L. Pearce and W. H. Brown, New York.
60 *Id. Pathologic Action of Arsenicals on Suprarenals. W. H. Brown and L. Pearce, New York.
61 Immediate Effects of Reduction of Kidney Substance. H. T. Karsner, H. A. Bunker, Jr., and G. P. Grabfield, Boston.
62 *Bactericidal Action of Ethylhydrocuprein on Pneumococci. H. F. Moore, New York.
63 *Serum Ferments and Antiferment During Pneumonia. J. W. Jobling, W. Petersen and A. A. Eggstein, Nashville, Tenn.
64 *Serum Changes Following Kaolin Injections. J. W. Jobling, W. Petersen and A. A. Eggstein, Nashville, Tenn.
65 *Effect of Protein Split Products on Serum Ferments and Antiferment. J. W. Jobling, W. Petersen and A. A. Eggstein, Nashville, Tenn.
66 *Effect of Killed Bacteria on Serum Ferments and Antiferment. J. W. Jobling, W. Petersen and A. A. Eggstein, Nashville, Tenn.
67 Cultivation of Tubercle Bacillus Directly from Sputum by Method of Petroff. R. A. Keilty, Philadelphia.
68 *Experimental Arthritis in Rabbit. Contribution to Pathogeny of Arthritis in Rheumatic Fever. H. K. Faber, New York.
69 Action of Lethal Dose of Strophanthin in Normal Animals and in Animals Infected with Pneumonia. R. A. Jamieson, New York.
70 Origin of Tumors in Mice. Tumor Incidence and Tumor Age in Various Strains of Mice. A. E. C. Lathrop and L. Loeb, St. Louis.

58. **Types of Arsenic Kidney.**—Pearce and Brown found that injection of arsenious acid into dogs produces a uniformly red kidney. The type of kidney produced by injections of salvarsan, neosalvarsan and galyl falls into the general class of red kidneys, although certain differences relate them to the other main type, the pale kidney. These differences consist in a relatively greater degree of tubular necrosis and in the character of the vascular injury. Injection of arsacetin into dogs produces an exceedingly pale kidney. The organ is enlarged, soft and friable. Arsenophenylglycin and atoxyl produce pale types of kidneys, but the amount and extent of vascular injury are somewhat greater than in the arsacetin kidney. The cortical necrosis of the arsenophenylglycin kidney is extreme and is quite comparable to that produced by arsacetin.

59. **Changes in Arsenic Kidneys.**—Here Pearce and Brown show that while some arsenicals produce changes in which vascular injury predominates, others produce an equally dominant tubular injury. In either of these groups the character and degree of the vascular or tubular injury produced by different compounds shows further variation, such that the lesions of different arsenicals of the same group are not identical. Each compound of arsenic tested produced a lesion complex in the kidney that is relatively characteristic for that compound. The mode and character of the action of arsenicals are dependent on the chemical constitution of the compound.

60. **Action of Arsenicals on Suprarenals.**—Toxic doses of all arsenicals produce definite pathologic changes in the suprarenals of guinea-pigs. These changes include congestion, hemorrhage, disturbances in the lipoid content, cellular degenerations and necroses, and reduction in the chromaffin content. The character and severity of the injury produced by different arsenicals varies with the chemical constitution of the compounds. From these facts, Brown and Pearce believe that suprarenal injury is an important factor in arsenical intoxication, and suggest that therapeutic doses of some arsenicals may produce suprarenal stimulation.

62. **Bactericidal Action of Ethylhydrocuprein on Pneumococci.**—Moore claims that the serum of rabbits which have been previously treated with a single dose of ethylhydrocuprein exerts a bactericidal action on, and, later, inhibits the growths of pneumococci in the test tube. These actions are most evident in the serum of rabbits when the base (optochin base) is given in oil subcutaneously; somewhat less when the hydrochlorid of the drug is given in water subcutaneously; slight when the base is given in oil intramuscularly; and least evident, or absent, when the hydrochlorid in water is introduced directly into the stomach. To get these effects by the intravenous route, toxic doses must be given, and, even with toxic nonfatal doses, the effects do not last

long. In the case of the base given in oil subcutaneously to rabbits in a dosage of 0.1 gm. per kilogram of body weight, the bactericidal action of the serum is at its maximum about one hour after administration, and it passes into an inhibitory effect about four hours after the drug has been given. In man the same inhibitory and bactericidal actions of the serum are present when a single dose of 0.5 gm. of the hydrochlorid of the drug is given by the mouth or subcutaneously, but the bactericidal action is not so marked as in rabbits. When the optochin concentration in the serum has, apparently, diminished to a certain point in relation to the number of pneumococci present, the pneumococci which have survived the bactericidal action for a few hours acquire the power of growing freely.

63. **Serum Ferments and Antiferment During Pneumonia.**—The authors state that the crisis in pneumonia is usually accompanied by (*a*) decrease in the serum antiferment; (*b*) the mobilization of a nonspecific protease in the serum; (*c*) an increase in serum lipase; (*d*) a decrease in the noncoagulable nitrogen and of the proteoses in the serum. The crisis is associated with the beginning of an active autolysis, the latter depending on an altered relation between the ferment-antiferment balance. The fibrin and leukocytic débris must be considered as one of the potential sources of toxic substances. With rapid autolysis proceeding, only nontoxic materials are absorbed.

64. **Serum Changes Following Kaolin Injections.**—The intoxication produced by the intravenous injection of inert substances such as kaolin, the authors state, is due to protein split products derived from the serum proteins. The kaolin acts as an adsorbing medium for the serum antiferment, bringing about an alteration in the ferment-antiferment balance. The intoxication is accompanied by an increase in serum protease and proteoses. The serum lipase, the amino-acids and the total noncoagulable nitrogen show relatively little change. The antiferment shows an initial increase, followed by a loss.

65. **Effect of Protein Split Products.**—In dogs the toxic effect of primary proteoses is usually associated with the following serum changes: (a) an increase in serum antiferment, with a following fall in titer; (b) some increase in serum protease; (c) an increase in serum lipase; (d) a decrease in serum proteoses and amino nitrogen. Secondary proteoses produce (a) less marked changes in the antiferment titer; (b) a marked increase in serum protease; (c) an increase in serum proteoses; (d) only a slight change in serum lipase; (e) a primary decrease in amino nitrogen. The peptone the authors used (prepared from dog muscle) caused (a) a change in antiferment titer similar to that produced by the primary proteoses; (b) a marked increase in serum protease; (c) only a slight increase in serum lipase; (d) a primary decrease in proteoses, followed by an increase later; (e) an increase in amino-acids. A small dose of peptone resulted in a decrease in antiferment titer, together with a primary decrease in serum protease. The peptone preparation was nontoxic when introduced into the stomach or rectum, while the intestinal injection was followed by an immediate intoxication.

66. **Effect of Killed Bacteria on Serum Ferments.**—The intravenous injection of killed organisms is followed by the mobilization of a nonspecific protease and lipase; the rapidity and extent of this reaction depend on the toxicity of the organism and on the resistance of the organism to proteolysis. The temperature and leukocytic curve bear no relation to the ferment changes. The serum antiferment is usually increased after the injection. Of the organisms studied, the typhoid bacillus produced the most marked ferment changes and the tubercle bacillus the least. The toxicity of the dried organisms cannot depend wholly on proteolysis in vivo, but must depend in part on the preformed toxic substances liberated on lysis. Serum protease should not be considered as the sole exciter of intoxication through the production of protein split products; it seems possible that its function may in part be one of detoxication.

68. **Experimental Arthritis in Rabbit.**—By a process of sensitization described, Faber was able to cause arthritis in rabbits constantly after one intravenous injection of the streptococcus. This reaction is specific. By intravenous inoculation, without previous sensitization of the streptococcus used, it was possible to cause arthritis in rabbits only after three or more injections. An analogy is suggested between the arthritis induced by sensitization and the relapses in human rheumatic fever. A further analogy is suggested between the development in rabbits of arthritis after repeated intravenous injections and the development of the primary lesion in human rheumatic fever.

Journal-Lancet, Minneapolis

October 15, XXXV, No. 20, pp. 555-585

71 Contributions of Twentieth Century Toward Better Understanding of Gastro-Intestinal Ailments. F. Smithies, Chicago.
72 Exophthalmic Goiter; Report of Case. F. M. Crain, Redfield, S. D.
73 Nasal Accessory Sinuses as Foci of Infection. W. R. Murray, Minneapolis.
74 Cerebrospinal Meningitis. A. Kuhlmann, Melrose.

November 1, No. 21, pp. 587-617

75 Team Work. J. T. Rogers, St. Paul.
76 Inventory of Progress of Medical Education in America and in Minnesota. R. O. Beard, Minneapolis.

Lancet-Clinic, Cincinnati

October 30, CXIV, No. 18, pp. 387-406

77 Epinephrin Reaction in Gastric Crisis of Tabes and Significance of Betaiminazolyl-Ethylamin in Feces. B. Holmes, Chicago.
78 Non-Drug Therapy. R. Southworth, Cincinnati.
79 Diagnosis and Treatment of Gastric and Duodenal Ulcers. J. R. Wathen, Louisville, Ky.
80 Intestinal Prolapse and Adhesions. H. W. Bettmann, Cincinnati.

Laryngoscope, St. Louis

October, XXV, No. 10, pp. 675-738

81 Report of Collective Investigation on Curettement of Eustachian Tube in Chronic Aural Suppuration. S. Yankauer, New York.
82 Surgical Anatomy of So-Called Capsule of Faucial Tonsil. G. H. Makuen, Philadelphia.
83 Some Facts Not Generally Understood About Oil Ether Colonic Anesthesia. J. T. Gwathmey, New York.
84 Brain Infection of Otic Origin; Report of Five Cases. J. W. Murphy, Cincinnati.
85 Spindle-Cell Sarcoma of Nasopharynx. H. B. Orton, Newark, N. J.

Medical Record, New York

November 6, LXXXVIII, No. 19, pp. 769-814

86 Value of Scientific Doubt in Surgical Diagnosis. J. B. Roberts, Philadelphia.
87 Bone Grafting and Arthroplasty. G. H. Sexsmith, Bayonne, N. J.
88 Neglect of Injuries to Nose from Football. D. B. Delavan, New York.
89 Electromechanical Treatment of Genito-Urinary Diseases. W. B. Snow, New York.
90 Prevention of Insanity. W. M. Kenna, Central Valley.
91 Quinin after Rectal Operations. E. Bonnot, St. Louis.
92 Picric Acid and Benzidin Stain; Transitional Cell in General Paralysis. B. Lemchen, Dunning, Ill.

New Mexico Medical Journal, Las Cruces

October, XV, No. 1, pp. 1-39

93 Protest Against Ill-Advised Surgery. H. M. Smith, East Las Vegas.
94 Enzymes. E. S. Bullock, Silver City.
95 Nephritis of Infection. M. K. Wylder, Albuquerque.

New Orleans Medical and Surgical Journal

November, LXVIII, No. 5, pp. 287-358

96 Bacteriology and Pathology of Blastomycotic Infections. H. W. Wade, New Orleans.
97 Medical Aspects of Systemic Blastomycosis. G. S. Bel, New Orleans.
98 Cutaneous Blastomycosis. H. E. Menage, New Orleans.
99 Surgical Aspects of Systemic Blastomycosis. R. Matas, New Orleans.
100 Malaria and Carriers of Malarial Infection. J. C. Cole, New Orleans.
101 Cervical Myoma: Report of Unusual Case. M. A. Shlenker, New Orleans.
102 *Malignant Disease of Left Testis. R. Matas, New Orleans.

102. **Malignant Disease of Left Testis.**—The essential facts of Matas' case were the following: First, that a mixed tumor

of the testis developed rapidly and attained unmistakable characteristics in the course of nine months, dating from its first appearance. Castration, including the spermatic cord beyond the internal ring, was performed Dec. 19, 1914, nine months after the first appearance of the disease. July 15, or twenty-seven days after this thorough castration, Chevassu's operation for the removal of the primary lymph zone for preaortic and perirenal metastases was performed. This operation demonstrated that extensive glandular metastases had already occurred. All the visible glands were removed; the pathologist reporting an identical histologic structure, namely, mixed tumor, in the metastases, as he had found in the testis. The patient recovered from this extensive and serious operation. May 1, or scarcely four months after this operation, it became quite evident and demonstrable that many large metastatic deposits had occurred in the posterior mediastinum, pleura and lung. May 30 the patient died, in consequence of the thoracic metastases. Thus death occurred about thirteen months after the first signs of the disease had appeared in the testis, six months after castration; and five months after the attempt at radical extirpation or Chevassu's operation.

New York Medical Journal

November 6, CII, No. 19, pp. 929-976

103 Value of Roentgen Ray in Diagnosis of Gastro-Intestinal Disturbances. J. Friedenwald and F. H. Baetzer, Baltimore.
104 Chronic Intestinal Stasis. A. Bassler, New York.
105 *Sesamoids of Flexor Brevis Hallucis; Their Importance. N. P. Barnes, Washington, D. C.
106 Fibroid of Ligamentum Ovarii Proprium. A. M. Hellman, New York.
107 Clinical Delimitation of Hysteria. M. Solomon, Chicago.
108 Diarrhea in Infancy. C. K. Johnson, Burlington, Vt.
109 Immunization with Autogenous Proteins in Bronchial Asthma. H. Iskowitz, New York.
110 Vincent's Angina. A. G. De Sanctis, New York.

105. **Sesamoids of Foot.**—The sesamoids of the metatarsophalangeal articulation, Barnes says, demand attention. Their constancy and prominence is shown by all the plates taken at random of males and females from 15 to 75 years of age. Situated one in either head of the flexor brevis hallucis. They are bound together by a strong fibrinous structure and capsular ligament, forming a groove on the under surface for the passage of the tendon of the flexor longus hallucis. The sesamoid bones must be present and the great metatarsophalangeal joint must be normal for its proper functioning. Injuries to these bones are the result of direct violence, and the extent of injury is proportionate to the force of the violence or the length of time of its continuance. Thus, a heavy weight falling on the foot, the body weight being caught with great force on the ball of the foot, as in falling from a height or slipping while carrying a weight, or the twisting or slipping of the foot off the prong of an automobile clutch or brake, may fracture one or both of these bones completely. The inner bone situated directly under the head of the metatarsal is the more commonly injured.

The result of a serious trauma of this sort asserts itself with corresponding pain and tenderness, increasing with use. Disability, from resulting inflammation and sympathetically lame muscles, becomes complete. More frequently in these days of constant dancing, hard floors and pavements, high heels and thin shoe soles, the trauma comes on gradually. Short rests and cold applications at the onset give relief, but on resuming the excessive glide under the hypnotic sway of the rhythmical rag and the spirit of "on with the dance, let joy be unconfined," the heat and discomfort, pain and tenderness return. Continuance of this indulgence produces a cellulitis, tendosynovitis, periostitis, tissue thickening and sometimes exostosis and the corresponding lame muscles from unnatural walking. Trauma of the tissues thus produced naturally enforces some form of rest treatment. To this rest treatment the attendant may add counterirritants, heat and pads.

The plan Barnes has devised to protect these injured bones is effective. The shoes the individual has been wearing, the more worn and thin the better, are simply half soled with a good, thick leather, cutting out the inner surface completely corresponding to the position of the sesamoids. New shoes have the outer sole removed, corresponding to the position of the bones in question. A hole an inch or a little more in diameter is cut out sharply and completely in the inner sole. If the thickness of the sole is not enough to keep the sesamoids from touching the floor, an extra sole is applied cut out in the same way. No inner pads are used, but the projection is permitted to make its own depression on the soft inner sole, which acts as a hammock or drum head. In fracture or trauma followed by exostosis open surgery is needed. The former may be treated in the same manner as fracture of the patella, or the exostosis may be removed without disturbing the joint.

New York State Journal of Medicine

October, XV, No. 10, pp. 373-414

111 Spinal Fluid in Syphilis. S. R. Miller, Baltimore.
112 *Organic Obstruction of Ileum as Cause of Gastric Disturbance. G. Chambers, Toronto, Canada.
113 *Intestinal Prolapse and Adhesions. H. W. Bettmann, Cincinnati.
114 Intestinal Stasis. A. A. Jones, Buffalo.
115 Fractures in Vicinity of Joints. C. E. Caldwell, Cincinnati.
116 Available Fields for Research and Prevention in Mental Deficiency. M. G. Schlapp, New York.
117 Improvements in Technic of Cesarean Section. W. M. Brown, Rochester.
118 Case of Spontaneous Rupture of Uterus. R. McPherson, New York.
119 Case of Hydrocephalus. A. W. Armstrong, Canandaigua.

112 and 113. Abstracted in THE JOURNAL, May 22, 1915, p. 1787.

Philippine Journal of Science, Manila

July, X, No. 4, pp. 249-306

120 Pathologic Anatomy of Bubonic Plague. B. C. Crowell, Manila.

Surgery, Gynecology and Obstetrics, Chicago

November, XXI, No. 5, pp. 541-668

121 *Premature Separation of Normally Implanted Placenta. J. W. Williams, Baltimore.
122 What Has American Gynecologic Society Done for Gynecology? T. J. Watkins, Chicago.
123 *What Is Fate of Ovaries Left in Situ After Hysterectomy? H. N. Vineberg, New York.
124 *Ovarian Transplantation. F. H. Martin, Chicago.
125 *Subcutaneous Transplantation of Ovarian Tissue. S. A. Chalfant, Pittsburgh.
126 *Study of Management of Placental Stage of Labor. J. O. Polak, Brooklyn.
127 *Hair Balls, or Hair Casts, of Stomach and Gastro-Intestinal Tract. R. Matas, New Orleans.
128 Cysts of Prostate. J. H. Cunningham, Jr., Boston.
129 *Surgical Treatment of Tubercular Ureter in Female. D. Bissell, New York.
130 *Partial Occlusion in Treatment of Aneurysms. E. Martin, Philadelphia.
131 *Perinephritic Abscesses. W. F. Braasch, Rochester, Minn.
132 Obstetrics, Lost Art. R. W. Holmes, Chicago.
133 Chancre of Cervix Uteri. U. J. Wile and F. E. Senear, Ann Arbor, Mich.
134 Physiologically Active Substances Contained in Placenta and in Corpus Luteum. R. T. Frank, New York, and J. Rosenbloom, Pittsburgh.
135 Operative Treatment of Bad Results After Fracture. J. E. Moore, Minneapolis.
136 Construction of Artificial Vagina with Establishment of Menstrual Function. W. D. Ward, Rochester, N. Y.
137 Management of Deficient Lactation. N. S. Heaney, Chicago.
138 Small Doses of Pituitary Extract in Obstetrics. J. L. Bubis, Cleveland.
139 New Tonsil-Holding Forceps. S. C. Gliddon, Danville.

121. **Premature Separation of Placenta.**—One of Williams' two patients, on whose cases this article is based, presented albuminuria and probably nephritis, while in the other the urine was normal both before and after the accident; yet both presented identical uterine lesions with striking arterial changes. Williams believes that they were both due to some common cause, which he assumes to be "toxemia" in character, but distinct from the usual toxemia of pregnancy, and concerning the nature and origin of which he is ignorant. The conclusions drawn from his study by Williams are: 1. That premature separation of the normally implanted placenta occurs much more frequently than is generally believed and may give rise to only trifling clinical symptoms or may put the life of the patient in the greatest jeopardy. 2. That in the severe cases, at least, the accident is associated

with profound disorganization of the uterine muscle by hemorrhage, the so-called uteroplacental apoplexy. 3. That its causation is probably dependent on some as yet undifferentiated form of toxemia, which may or may not be accompanied by albuminuria.

The author urges that the possibility of the accident should always be considered when dealing with antepartum hemorrhage, and that a tentative diagnosis should be made unless the existence of placenta praevia can positively be demonstrated. Furthermore, a diagnosis of concealed hemorrhage should be made whenever a patient in the later months of pregnancy complains of intense abdominal pain, is pallid, and presents a uterus of ligneous consistency, in the absence of external bleeding and even of the clinical symptoms of shock. The second important deduction is that hard and fast rules cannot be laid down for the treatment of premature separation of the placenta; but at the same time it should be regarded as axiomatic that even in slight degrees of separation the bleeding will continue until the uterus has been emptied of its contents and is able to contract down on and constrict the bleeding vessels. In general, the decision to interfere will depend on the amount of blood lost and the general condition of the patient. If the hemorrhage is slight, and is not associated with untoward symptoms, the case will usually terminate successfully by the unaided efforts of Nature; although it is understood that the patient should be watched carefully and interference resorted to on the first appearance of serious symptoms.

On the other hand, if the bleeding is profuse and the condition of the patient serious, prompt intervention is necessary, when the choice of operation will depend on the condition of the cervix—forceps, version, the introduction of Champetier de Ribes' balloon, or cesarean section being employed, according to the exigencies of the case. The latter operation should be chosen only when the cervix is but slightly dilated, or when the general condition of the patient is more serious than can be accounted for by the amount of blood which has escaped. All danger has not passed with the delivery of the child through the maternal passages, whether spontaneously or artificially; as the uterus frequently fails to contract satisfactorily, and death from atonic hemorrhage may result, unless radical measures are taken for its relief. Accordingly, when such an accident supervenes, time should not be wasted in employing hot intra-uterine douches, ergot, or pituitary extract and similar measures, but the uterus should be immediately packed with gauze. If this leads to forcible contractions and completely checks the bleeding, well and good; but if blood-tinged serum makes its way through the pack the abdomen should be opened immediately and the uterus removed in toto, or amputated supravaginally.

123 and 124. Abstracted in THE JOURNAL, June 12, p. 2014.

125. **Transplantation of Ovarian Tissue.**—Ovarian tissue was transplanted by Chalfant in thirty-two patients the first one Dec. 30, 1912, and the last one Jan. 27, 1915. In every instance it seemed necessary to remove the ovaries on account of infection, extensive cystic degeneration, damage from extensive adhesions, or impaired blood supply. In practically every instance, the tissue transplanted was abnormal. One patient died at the end of twenty-six hours from a peritonitis due to the bacillus aerogenes capsulatus. In spite of the fact that many of the sections were taken from ovaries in intimate contact with pus-tubes, in only one instance was the graft infected. In no case was convalescence influenced by the graft. In a few instances there was a little local tenderness for a time. In 13 patients one ovary was not perfectly normal and there was a possibility that it might require removal, or that the internal secretion from it might not be sufficient, so that it was thought wise to conserve as much ovarian tissue as possible.

The graft was palpable in 9 of the 13 cases, the oldest one, after one year. In two cases the graft increased in size and was tender and painful a few days preceding menstruation. Only one patient complained of flashes of heat or other nervous disturbances, and it is probable that in this case the ovary was infected and destroyed. Both ovaries were removed, but the uterus remains in two patients. One patient operated on May 22, 1914, menstruated the first time Sept. 1, 1914, and regularly each month including February, 1915. Since that time there has been no menstrual flow. Flashes of heat were moderately severe just after leaving the hospital, disappeared with the onset of menstruation and recurred again in March, at the time of her expected period, but were less severe and lasted about three or four weeks. The other patient has not menstruated. Menopausal symptoms began three months after the operation and have been quite severe. The uterus and both ovaries were taken from 17 patients. Five patients give evidence of continued function of the graft. Of these 17 patients, one died and one had moved and cannot be located. In the remaining 15, the graft was palpable in 12, not palpable in 3. It was tender in 6, but in only one was there much discomfort. This patient has such an unstable nervous system that it is extremely difficult to reach a true estimate of the severity of her discomforts. Distinct variation in the size of the graft was noticed by three patients. Two patients, 10.8 per cent., had no flashes of heat or nervous disturbances; in 7, or 41 per cent., the menopausal symptoms were slight, in 5, or 29.4 per cent., they were moderate; and in 3, or 1.77 per cent., they were severe. Of these 3, one is suspected of having a mild hyperthyroidism. Another has this condition.

126. Abstracted in THE JOURNAL, June 12, p. 2015.

127. Abstracted in THE JOURNAL, January 23, p. 367.

129. **Tuberculous Ureter in Female.**—Bissell advocates the removal of the ureter with the kidney whenever tuberculous changes in the ureter exist the adoption of the combined transperitoneal and retroperitonel routes when the ureter and the kidney are removed at the same time; the use of this same combination of routes when as a secondary procedure the ureter with its accompanying sinus is removed.

130. **Partial Occlusion in Treatment of Aneurysms.**—The treatment indicated in cases of pulsating exophthalmos, due to arteriovenous aneurysm, according to Martin, would be, after preliminary tests as to the effect of compression of the carotid: 1. An occlusion of the vessel by an absorbable ligature up to the point of stopping bruit and pulsation. 2. Ligation of one or more dilated orbital vessels. 3. Starvation diet, guarding against acidosis. Little fluid. Bowel evacuations, accomplished without straining, and two weeks rest in bed made, if not alluring, at least bearable by the judicious use of anodynes.

131. **Perinephritic Abscesses.**—Of 67 patients operated on at the Mayo Clinic, only 2 (3 per cent.) died as the result of operation. Three other patients were reported dead at three, seven and twelve months, respectively, after operation. The subsequent course was ascertained in 51 of the remaining patients. In 18 of this number the wound had healed in less than a month after operation. Of the remaining patients, 16 continued to drain for two months, 6 drained for three months, and 3 drained as long as six months after operation. The fistula persists to the present date in 4 patients, all of whom drained longer than six months. In 2 of these patients an etiologic renal lesion was ascertained at the time of drainage and subsequently nephrectomy was advised. In the other 2 no evidence of renal lesions was discovered on clinical examination; however, the more recent clinical tests were not employed. One of these patients, drained one and one-half years ago, has returned with cystoscopic evidence of an etiologic renal lesion not previously discovered.

Tennessee State Medical Association Journal, Nashville

October, VIII, No. 6, pp. 251-294

140 Heart in Some Acute Infectious Diseases. W. H. Witt, Nashville.
141 Gastro-Enterostomy. J. H. Maury, Memphis.
142 Teratology. S. M. Miller, Knoxville.
143 Treatment of Tubercular Peritonitis. W. A. Bryan, Nashville.
144 Contact Points of Medical Profession and Public. A. D. Dancy, Jackson.
145 Value of Necropsies in Hospital and Medical Practice. H. T. Brooks, Memphis.
146 Local Anesthesia in Rectal Surgery. P. DeWitt, Nashville.
147 Fistula in Ano. D. R. Pickens, Nashville.
148 Eugenics and Marriage. L. A. Stone, Memphis.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

August, XX, No. 3, pp. 77-108

1 Roentgenologic Types of Pulmonary Tuberculosis. H. Walsham and W. Overend.
2 Localization of Projectiles by Roentgen Ray. F. de Courmelles.
3 Minor Points in Roentgenography. N. K. Cherrill.

September, No. 4, pp. 109-142

4 Roentgenotherapy; Its Scientific Basis and Its Teaching. (To be continued.) J. Joly.
5 Use of Intensifying Screens in Roentgenography. L. G. Heilbron.
6 Causation of Williams' Sign in Early Pulmonary Tuberculosis. H. Walsham and W. Overend.

October, No. 5, pp. 143-174

7 Gastroptosis. A. F. Hertz.
8 Roentgen Diagnosis of Fracture of Skull. W. H. Stewart and W. H. Luckett.
9 Roentgenotherapy; Its Scientific Basis and Its Teaching. J. Joly.
10 Two Cases of Electric Burn Successfully Treated by Ionization. A. MacGregor.
11 Location of Foreign Bodies. E. M. Smiles.

British Journal of Tuberculosis, London

October, IX, No. 4, pp. 171-233

12 Open-Air Hospitals. A. E. Shipley.
13 Subcutaneous Tuberculin Injections and Diagnosis of Pulmonary Tuberculosis. E. G. Glover.
14 *Dispensary Treatment Without Tuberculin. A. Sandison.
15 Sanatorium Benefit for Tuberculous Subjects. H. A. Ellis.
16 Nourishment for Tuberculous. W. B. Milestone.
17 Antiformin and Examination of Tuberculous Sputum. W. J. Matthews.

14. **Treatment Without Tuberculin.**—Sandison claims that tuberculin should not be a necessary part of treatment at a tuberculosis dispensary; it is usually not even desirable, because: 1. Its administration cannot be effectively and safely controlled through a dispensary. 2. Its value is problematical, as no reliable statistics are possible under dispensary conditions, owing to the number of factors involved. 3. It is not the only way by which the attendance of patients can be secured. Dispensary treatment of tuberculosis must be based primarily on an intimate personal knowledge by the physician of the psychologic as well as the pathologic conditions of his patient. The principles of "graduated rest and exercise" can be effectively carried out in considerable detail by dispensary patients, and produce excellent results. The use of inhalants on a respirator is applicable to nearly all cases of pulmonary tuberculosis, and is a valuable adjunct to general treatment.

British Medical Journal, London

October 16, II, No. 2859, pp. 557-592

18 Ureteral Calculus; Its Symptoms and Treatment. (To be continued.) D. Newman.
19 *Removal of Bullet from Right Ventricle of Heart Under Local Anesthesia. L. H. C. Birkbeck, G. N. Lorimer and H. M. W. Gray.
20 *Drainage of Gunshot Wounds. C. M. Page.
21 Recruit's Heart. J. Mackenzie.
22 *Employment of Bandages for Irrigation of Wound Surfaces with Therapeutic Solutions and Draining of Wounds. A. E. Wright.

19. **Removal of Bullet from Heart.**—The soldier whose case is reported by the authors was admitted to a general hospital, July 19, 1915, having been wounded eight days previously. The bullet had passed through and killed a man in front of him. The patient was knocked down, but did not lose consciousness, and had not had any discomfort other than slight pain from the wound. There was a small dirty wound (one-half inch in diameter) just below and to the right of the xiphisternal junction, and also a painful swelling of the right parotid gland, which disappeared the next day. The patient showed no other symptoms during the first few days. He was kept in bed. The heart appeared to be normal and regular. The pulse varied between 80 and 90. The evening temperature rose to 100 to 101 F. Roentgenoscopy showed that in the lower portion of the heart shadow was a sharply defined dark shadow moving with the heart, and also apparently laterally in relation to the heart. It was seen to be quite definitely in the substance of the heart. It had a distinct rocking movement. No anteroposterior movement was visible in relation to the heart. The object seemed to be in, or close to, the lowest portion of the wall of the right ventricle. Its shape and size, so far as could be made out, were those of a rifle bullet. Attempts to take roentgenograms were unsuccessful.

As the pulse had shown some irregularity, rate 65 to 95, and the heart had occasionally dropped beats, an operation was decided on. Under local anesthesia a wide horseshoe-shaped incision was made, convexity upward, extending along the sixth costal cartilage on each side and across the sternum at the level of the attachment of the fifth cartilage. The perichondrium was separated from the left sixth cartilage, which was cut across at the costochondral junction and used as a lever to elevate the sternum while the triangularis sterni, pericardium, etc., were being separated off the posterior aspect of the flap. A small portion of the right sixth rib was removed close to the costochondral junction. The sternum, at the lower border of the fifth costal cartilages, was divided with bone forceps. The soft parts were then separated from the sternum and ribs. A hole about an inch long appeared in the pleura on the right side, in the track of the bullet.

The pericardium opened obliquely from the base to near the apex of the heart. About a dram of slightly blood-stained fluid was noticed in the pericardial cavity. The heart looked normal. No wound could be seen. On digital exploration the bullet was felt to be lying, apparently fixed, at the back of the heart, either in the wall or cavity of the right ventricle. The point of the bullet was near the apex of the ventricle. During the manipulations the heart was noticed to miss a beat occasionally—when touched at the upper and back part of the interventricular septum. The right ventricle was seized with a pair of catch forceps near the apex. When it was seen that this caused no disturbance a suture was passed through the muscle adjacent, and by these the heart was held forward. This in no way agitated the patient. On further exploration the bullet was definitely located by probing with a needle, and was thought to be fixed in the right ventricle near the posterior coronary vessels. After manipulation, the bullet was felt to change position and to be free inside the ventricle. It was worked away as far as possible from the coronary vessels and grasped between the thumb and finger. Two stitches were inserted into the muscle wall over the bullet.

The wall of the ventricle was incised for half an inch, and the bullet removed with forceps. While the wall of the ventricle was still being held firmly between the finger and thumb the stitches were tied. On removing the catch forceps there was brisk bleeding, which was stopped quickly by an under-running stitch. The pericardial cavity was wiped free of blood clot and was filled with normal saline to expel the air; it was then sewed up. The right pleural cavity was next filled with saline and the injured pleura sewed up. While the wound was being closed the chest was aspirated to remove the saline. About four hours after the operation the respirations rose suddenly to forty-eight a minute, and remained at about that level till he died four days after the operation. There was never any indication that the operation on the heart had interfered with its action, which, though quick (average 120 to 130), was wonderfully strong up to within a few hours of his death. No dropping of beats was noticed after the operation. The wounds in the heart had healed perfectly. The cause of death was judged to be multiple pulmonary infarction from clots derived from the right ventricle.

20. **Drainage of Gunshot Wounds.**—Page uses a tube made of rubber. In section it is star or pinion shaped. The outside diameter should be the same as that of full-sized ordinary drainage tube. For certain cases the drain should be provided with a central lumen. The tube is passed through the entire length of the wound track; the upper projecting extremity is capped by a piece of thin rubber tubing for example, a cut rubber glove finger—which extends just into the entry of the wound. As a result, a series of gutters lying against the wound surface extend the length of the track. When fluid is syringed into the cap, it passes down each

gutter, so as to bring the solution into contact with practically the whole wound surface, at the same time clearing away from the same area all débris. After lavage, the maximum capillary surface in proportion to the size of the drain is in action. When this type of tube is employed for blind wounds the provision of a central lumen allows the fluid to be syringed to the bottom of the track, whence it will return along the various gutters.

22. **Irrigation of Wounds with Therapeutic Solutions.**—Siphon drainage is the basis of the method advocated by Wright. The efficacy of bandage siphons depends on the volume of fluid delivered. This is determined (*a*) by the height to be climbed in the ascending limb; (*b*) by the length of, and weight of water in the descending limb; and (*c*) any obstacle to delivery encountered at the distal end of the descending limb. In addition to these the rate of delivery will be affected (*d*) by the nipping of the bandage when it rests on a knife edge, this factor coming seriously into account in experiments with a long length descending limb heavily weighted with water. Factors (*b*) and (*c*) have to be taken special note of in connection with the drainage of wounds. In cases in which other conditions are the same it is always the siphon with the longer descending limb which gives the more efficient drainage. Again, other conditions being the same, a larger volume of water is delivered from a bandage whose end is immersed in water than from a bandage suspended in the air. In case of water dripping off from a bandage into the air, consideration will show that the bandage will, just before the drop falls, be overfull of water, and that the inflow into it will for that moment be suspended, to be accelerated as soon as the drop has fallen off. As a result, we have in the bandage which is dripping off into air a cyclically interrupted flow. In contrast to this we have, in cases in which the descending limb of the bandage goes down into water, a continuous unobstructed delivery.

The practical application of this in connection with wounds is that the siphon bandages which carry off the washings from wounds ought to pass down from the patient's beds into water in vessels placed on the floor. And if any bandage happens to be too short to dip into the water the drip from it will be accelerated if it is torn into tails. In cases in which only little water is flowing off through bandages draining a wound, evaporation must be guarded against, for this will, by diminishing the load of water, retard the outflow into the descending limb. In cases in which an ampler outflow is desired, it can be obtained by packing the wound full of bandages. For details of the technic of this method of drainage the original article should be consulted.

Glasgow Medical Journal

October, LXXXIV, No. 4, pp. 241-319

23 *Cases Illustrating Some of Rarer Blood Diseases. J. S. McKendrick.
24 Hematuria, Symptom. D. Newman.

23. **Some of the Rarer Blood Diseases.**—Two cases of splenic anemia in which a splenectomy was done, followed by apparent cure, are cited by McKendrick. In the first case, that of a boy 15 years of age, there was a diminished fragility of the red blood corpuscles; urobilin was present in the urine, but there was no bilirubin in the blood serum; there was a normal number of white blood corpuscles instead of a leukopenia. The anemia was of the chlorotic type, the color index being 0.35. The patient suffered from perisplenitis and the results of anemia, but otherwise he had the appearance of health. There was no evidence of tuberculosis, and the Wassermann test was negative. There were no signs of rickets or worms. There had been considerable epistaxis and hemorrhages into the skin, but no pigmentation. There was no enlargement of the lymphatic glands. The liver was enlarged, but there was no ascites. On the day after the splenectomy the blood was examined, when there was an increase in the red and white cells, but no visible normoblasts. The white cells were chiefly polymorphonuclears. Eleven months after the operation the boy looked well and had no anemia from his appearance. The chief point of interest in the second case, that of a boy 8 years of age, was the immediate effect of splenectomy. On the day after operation the red cells had increased from 2,550,000 to 4,650,000; the white cells from 7,800 to 34,800; an occasional normoblast had given place to a rush of these, averaging 1,800 per cm. The increase in the white cells was due to a great preponderance of polymorphonuclears, the increase after the operation being 40 per cent. Another point in the case was that the bone-marrow was tapped before the operation and found to be hyperplastic. The patient made an uninterrupted recovery, and is still in the best of health.

Lyon Médical, Lyons

CXXIV, No. 6, pp. 181-216

25 Temporary Substitutes for Foreign-Made Proprietaries. (Comment le médecin peut-il provisoirement remplacer par des produits français les produits pharmaceutiques allemands les plus importants?) B. Lyonnet and R. Boulud.
26 Brief Inhalation of Ether Relieves Gallstone Colic. (Colique hépatique. Traitement systématique par les inhalations d'éther.) P. Aubert.
27 Favorable Influence of Jaundice on Tendency to Mild Pulmonary Edema. (Influence de l'ictère sur l'état cardio-pulmonaire.) P. Aubert.

No. 7, pp. 217-248

28 *Pulmonary Complications of Typhoid and Paratyphoid Fever. G. Mouriquand.
29 *Compression of Vagus Nerves in the Neck Restores Man After Knock-Out Blow on Solar Plexus. Molle.

No. 9, pp. 281-312

30 Impressions of a Surgeon at the Front. (Sept mois de chirurgie dans un hôpital du front.) A. Rendu. Commenced in No. 7.
31 *Treatment of Erysipelas with a Silver Nitrate Solution. H. Rondet.

28. **Pulmonary Complications in Typhoid.**—Mouriquand's experience with large numbers of typhoid and paratyphoid cases at Nancy suggests that much can be done to ward off bronchitis and pneumonia in such cases. The main thing is to prevent contagion from case to case. In one ward five typhoid patients in adjoining beds were doing well when one after another they developed pneumonia and three died. The epidemic of pulmonary complications died out at once as soon as each typhoid patient showing such symptoms was isolated. One patient developed a pure streptococcus purulent pleurisy and five days later the neighboring patient developed the same. Crowding a ward is particularly dangerous in case of contagious diseases of any kind. When the space between beds can be increased, the danger of pulmonary complications grows constantly less. The more serious cases should be separated as widely as possible, and if any septic complication develops strict isolation should be enforced and the bed and bedding disinfected with special care.

29. **Treatment of Knock-Out Blow.**—Molle has been making a special study of the therapeutic effects that can be realized by compression of the nerves and vessels in the neck. A recent thesis on the subject was published by one of his students this year. He here reports the surprising success of the measure in a young man who had received a blow in the epigastrium from the butt of a gun and dropped unconscious at once. Molle reached him in half an hour and found him still absolutely unconscious and racked by efforts to vomit, pulse 140, but there was no hematemesis and but little muscular defense. Molle pressed on the nerves and vessels at each side of the neck, applying the thumb pressure again and again, briefly, repeatedly and forcibly, hoping to act thus on the nerves rather than on the vessels in the neck. The latter are affected more by slow, progressive and prolonged pressure. Five or six seconds after he had begun this staccato pressure, just inside the inner margin of the sternocleidomastoid muscle, the young man opened his eyes, sat up and looking in surprise at the group around him asked what had happened. In an hour he felt quite himself but had some nausea and no appetite for the following three days.

31. **Silver Nitrate Solution in Treatment of Erysipelas.**—Rondet calls attention to his successful use for thirty years of a 1:40 solution of silver nitrate applied to the erysipelatous area every three hours, day and night, for seven days at least, never more than nine days. The skin is first cleansed with hot soapy water. The beneficial action is so pronounced in twelve or twenty-four hours that one is tempted to sus-

pend the treatment. But any cessation of the applications is followed by exacerbation of the erysipelas; to avoid surprises of this kind the treatment must be kept up systematically for the nine days. This is the regular duration of erysipelas, he remarks; even the recurrences run a nine-day course. The fluid should be swabbed all over the area and for two fingerbreadths beyond. He remarks in conclusion that, naturally, the benefit is most marked the earlier the treatment is begun.

Paris Médical

V, No. 6, pp. 109-124

32 The Work of the Field Hospital. (L'ambulance chirurgicale immobilisée près du front.) A. Latarjet.
33 Board Method of Immobilization for Compound Fracture of the Femur. L. Duvernay.

Nos. 7-8, pp. 125-164. Electrotherapy Number

34 What One Must Know About Electrotherapy to Apply It to the Wounded. (Ce que l'on ne doit pas ignorer en électrothérapie de guerre.) A. Weil.
35 Direct Electric Tests During Operations on Wounded Nerves. A. Léri.
36 Neuritis After Wounds and the Therapeutic Physical Measures. Delherm and Dausset.
37 Electrodiagnosis and Treatment of Wounded Nerves. J. Larat and P. Lehmann.
38 Improvised Electrotherapeutic Appliances. (Installation économique d'électrothérapie avec des moyens de fortune.) P. Bonvoisin and L. Palfray.
39 Localization and Extraction of Projectiles by Aid of Electricity. A. Weil.

Presse Médicale, Paris

October 7, XXIII, No. 47, pp. 385-392

40 *Treatment of Suppurating Gunshot and Shell Wounds of the Knee. (Traitement des arthrites suppurées du genou par plaies de guerre.) L. Bérard and Barjavel.
41 Induced Formication as a Sign of Lesions of Peripheral Nerves. (Le signe du fourmillement.) J. Tinel.
42 Simplified Technic for Circular Amputation. H. Chaput.
43 Simple Apparatus for Continuous Aspiration of Wounds, with or Without Continuous or Intermittent Irrigation. Saissi.

40. **Wounds of the Knee Joint.**—Bérard and Barjavel emphasize that a bullet or fragment of shell wounding the knee almost always causes more destruction than is apparent from the outside. Armed expectant treatment is justified even when the indispensable radiography shows a bullet still in the tissues. They saw four cases of this kind, the projectile still in the synovialis after two or three weeks, and perfectly tolerated. In five cases they succeeded in saving the functioning of the knee by Carrel's method of aspirating the secretions. In three others it failed and secondary amputation became necessary. They review the technic for arthrotomy and resection, emphasizing in conclusion the necessity for close and continued supervision of the case by the same surgeon from the earliest possible moment. He is thus able to guide the treatment according to indications as they arise day by day.

Berliner klinische Wochenschrift

October 4, LII, No. 40, pp. 1033-1056

44 *Substitutes for Glycerin. (Kriegsaphorismen eines Dermatologen. XIX. Glycerinersatz.) P. G. Unna. Concluded in No. 41.
45 *Treatment of Congenital Syphilis. E. Müller.
46 *Influence of Muscular Work on Sugar Content of the Blood. (Einfluss der Muskelarbeit auf den Blutzucker.) W. von Moraczewski.
47 *Technic That Shows Membrane-Like Formation in Human Tissues. (Darstellung membranartiger Bildungen im menschlichen Gewebe.) K. Herxheimer.
48 *Radiotherapy of Cancer of the Mouth. (15 Fälle von Mundhöhlenkrebs mit Radium günstig behandelt.) A. Sticker.
49 Unknown Factors in Transmission of Typhus. (Auftreten von Flecktyphusepidemien in Truppen- und Gefangenenlagern.) F. Wolter.

October 11, No. 41, pp. 1057-1080

50 *Obscurities and Defects in Present Methods of Treating Syphilis; Suggestions for Improvement. C. Bruhns.
51 *"Aplastic Anemia" Developing from Benzol or Roentgen Exposures. (Aleukia haemorrhagica.) E. Frank.
52 Treatment of Whooping-Cough Should be Addressed to the Nervous System. (Ueber den Keuchhusten.) V. Lange.

44. **Substitutes for Glycerin.**—Unna remarks that the demand for glycerin during the war, for production of nitroglycerin, threatens to deplete the small stocks of glycerin still left in the pharmacies. Consequently it is well to be on the lookout for effectual substitutes. Aside from its value as a lubricant and its keeping properties, glycerin is prized mainly for its power to attract water. Merely as a lubricant, it is easy to find good substitutes for it among hydrocarbons of all kinds. There are also two cheap and abundant substances which can take its place as far as its water-attracting power is concerned. These two substances are syrup (from sugar) and calcium chlorid. Sugar, we know, attracts water; it increases the amount of saliva in the mouth, and this assuages thirst (sweetened water); keeps the dry mucosa in the upper air passages moist, and, in rectal enemas, induces defecation with an overdry rectum. Sugar has, besides, in contrast to glycerin, a reducing power which we utilize when we use syrup as a vehicle for readily oxidized drugs (such as ferrous iodid), or when we strew sugar on aphthous ulcerations or caro luxurians. Equally familiar, but less heeded, is the water-attracting power of calcium chlorid. Not only in solution but also in the form of a salve, it exerts this healing influence on callous and pruriginous eczema. By introducing a deposit of calcium chlorid into the skin, the layers below and above it soften up under the influence of the water attracted by the calcium chlorid. Rademacher has recommended a 4 per cent. solution of calcium chlorid for softening furuncles. Both the chlorid and the syrup have the further advantage that, as they liquefy, they bind considerable water and thus have a cooling action. For a field of furuncles, to take the place of the excellent combination of 60 parts kaolin, 30 parts glycerin and 10 parts ichthyol, Unna recommends as a substitute formula a mixture of 40 parts kaolin, 30 parts syrup, 10 parts ichthyol and 20 parts aqueous solution of calcium chlorid (1:2).

45. **Treatment of Congenital Syphilis.**—Müller advocates intensive courses of treatment in a special department in general hospitals rather than separate institutions for syphilitic children. He has been applying treatment more energetically of late under the influence of the new régime in regard to syphilis in adults. For infants he prefers intramuscular injection of a suspension of calomel in olive oil, and gives no mercury by the mouth or inhalation, but alternates with neosalvarsan. For children over 2, he gives inunctions alternating with neosalvarsan injections. Some of the infants treated as above died suddenly, as in collapse. Probably the system was overwhelmed too suddenly with the toxins liberated by the destruction of such quantities of spirochetes. Since these experiences he has reduced the dosage somewhat for infants. Once past this first course of treatment, however, the children thrive well under the succeeding courses.

He has been impressed with the improvement in intelligence of many of the children during the courses of treatment. Among the cases related is that of a bright child with adenoid vegetations. As they were excised their extraordinary hardness was noted, and the diagnosis wavered between syphilis and sarcoma. The child seemed healthy and bright, and there was nothing to suggest syphilis, but the Wassermann test gave a pronounced reaction. The aim should be with congenital syphilis to eradicate it entirely. Hence efforts are justified to make the first course of treatment thorough and decisive. The Wassermann reaction is his guide. This test is applied before each course of treatment and again eight or ten days after its close. After the Wassermann has become negative, two courses are given in prophylaxis. If the reaction is positive, treatment is continued until the desired aim is reached. In the most favorable case, therefore, three courses are required and otherwise four or five.

46. **Influence of Muscular Work on the Sugar Content of the Blood.**—Moraczewski noticed that in persons inclined to glucosuria, the sugar content of the blood displayed a tendency to increase under conditions in which there was no increase in the healthy. This occurred even on a fat diet. This fact enables detection of a latent tendency to glycemia; after a given exercise the sugar content in the blood rises when it remains stationary in the healthy. The findings in some healthy and diabetic persons are tabulated for comparison. After ingestion, fasting, of 200 gm. sugar, the

healthy assimilated it completely while the diabetic showed an increased proportion of sugar in the blood. This alimentary glycemia is due to defective utilization of the sugar, that is, to defective synthesis of glycogen, while exercise glycemia is due to absorption of sugar from its deposits, whether in muscle or elsewhere. The diabetic mobilizes his sugar reserves more promptly and completely than the healthy. Normally, in repose, the sugar content of the blood declines and it rises during and after exercise. Exercise also increases the output of uric acid in the urine; it parallels the blood sugar content, increasing under exercise and declining during repose regardless of the amount of urine voided. Even when sweating freely, the output of urine much reduced, the uric acid in the urine corresponded to the sugar content of the blood, both increasing during exercise, and declining in repose, in the healthy.

After vigorous exercise, ingestion of 200 gm. of sugar, to test the tolerance, induces no increase in the sugar content of the urine and very little if any in the blood. During repose, on the other hand, it is much easier to induce glycemia and glucosuria. Hence "exercise glycemia" cannot be compared with alimentary glycemia, as the latter leads to glucosuria while the former augments the tolerance and counteracts glucosuria. Diabetics excrete less sugar in the urine during fever and eliminate more during repose than when exercising. Exercise glycemia is thus associated with absorption of sugar and increased power of oxidation. The above facts may have to be considered in treatment of diabetes, if confirmed by others.

47. **Membrane-Like Contours to Human Tissues.**—Herxheimer has found that staining organs with azure-eosin and decoloring with a tanning technic shows up a specific membrane-like contour of the connective-tissue fibers, etc. This technic shows up further delicate fibers on the sebaceous and sweat glands, intima of the blood vessels, etc.

48. **Cancer of the Mouth and Radium Treatment.**—Sticker reports fifteen cases in most of which malignant disease of the mouth retrogressed under radium treatment without scars or mutilation. The list includes some cases of recurrence after operations. He declares further that radiotherapy is preferable to surgical treatment in many cases for technical reasons and also from the standpoint of immunity. This statement is based on experimental research which demonstrated that it is possible to induce an implantation tumor on laboratory animals in various different organs and points, inoculated all at the same time, but that, after having been once successfully inoculated, it is impossible to induce further growths by later implantation of tumor cells at any point. After complete excision of the implantation tumor, however, a new implant "takes" at any and every point inoculated all at the same time. On the other hand, if the implantation tumor was only partly excised and it continued to grow, subsequent implantations gave constantly negative results. These experimental data correspond to what is observed in the clinic during the period preceding metastasis. The cancer long remains solitary, and, especially with cancer in mucous membranes, notwithstanding the constant opportunities for implantation of tumor cells farther along, the mucosa beyond is generally free from metastases, even with extensive ulceration. After vaginal hysterectomy for cancer of the uterus, he continues, recurrence in the vagina is not uncommon, while metastases in the vagina, with the uterine cancer still present, are extremely rare.

These and similar data cited are alleged to explain why radiotherapy is more promising in certain cases than surgical removal of the focus. Under the radiotherapy, the cancer cells being gradually destroyed and passing into the circulation, cause a lively production of antibodies, and these protecting substances combat the growth of any new cancer cells. The antibodies thus generated are similar in nature to the autolysates of cancer cells which some are using now in treatment of cancer. None of the experiences in this line reported to date, however, make the distinction which he emphasizes between the periods before and during metastasis. The nonheeding of this fundamental distinction readily explains the unsatisfactory results to date. It is by no means immaterial whether the tumor autolysates are taken from the body while it is still engaged in producing antibodies, that is, during the premetastasis stage, or whether the material is not taken until after the body has lost its capacity for antibody production.

He describes his fifteen cases in detail; in three the cancer was on the tongue and the radium induced a clinical cure. In one case, only seven twelve-hour exposures, all at night, accomplished the purpose, the cancerous crater healing completely in a few weeks. In seven cases the cancer was in the lower jaw and in five others in the upper jaw. The radium was fastened in a plate made to fit over the upper or lower teeth. One patient wore this for thirty nights' exposures, and it did not interfere with his sleep. In two other cases the cancer was a recurrence after one or several operations. By modifying the tooth-plate-holder it was possible to apply the rays in various directions thus facilitating the cure.

50. **Defects in Present Methods of Treating Syphilis.**—Bruhns insists that actual progress in the treatment of syphilis will have to be based on prolonged supervision of cases carried on and recorded systematically. This is scarcely possible except with private patients, and with repeated collective inquiries. He presents evidence to sustain his contention that medical supervision is required for many more years than is now considered necessary. An isolated negative Wassermann is no criterion that the disease is extinct. Only when the clinical and serologic findings are constantly negative, on repeated examinations, for many years, can we regard the cure as probable. He lists the outcome of the Wassermann test repeated about yearly from 1908 to date in 100 private patients infected with syphilis ten or more years ago. In forty-two the test was constantly negative; in 32, positive at first but negative later; in seven, constantly positive, notwithstanding repeated courses of treatment; in three, positive at first, then long negative, but finally veering to positive again; in eight, negative at first, then positive and finally negative, and in eight, negative at first but finally positive. The last three groups are particularly suggestive; in some the long negative reaction for five or six years suddenly veered to a pronounced positive reaction without any clinical manifestations becoming evident at the time or later. After renewed courses of treatment in the two following years the response became negative again. Among the cases with constantly negative reaction were some in which brain trouble or tabes developed, demonstrating anew that the clinical manifestations and the serologic findings do not always run parallel.

We appreciate better now the dire consequences of syphilis; insurance statistics have shown that 15 or 25 per cent. die from the results and that from 6 to 10 per cent. develop disease of the central nervous system while even more suffer from arterial disease. Lenz estimates that 25 per cent. of all syphilitics have aortitis. Paralysis develops on the average ten or fifteen years after infection and manifest aorta trouble, eighteen or twenty years. By treatment in time, gummatous lesions retrogress, and hence specific treatment repeated often enough may ward off arterial and cerebral trouble later. Syphilitics should have impressed on them the necessity for keeping under medical supervision. Some central system might be devised to remind all syphilitics at regular intervals of the necessity for returning to be examined.

Some recent research has demonstrated that in from 60 to 75 per cent. of all the cases of tabes or paresis other members of the family had been infected. This proportion is far larger than is found in the families of syphilitics who do not develop tabes or paresis. These and other facts seem to indicate that the form of syphilis which develops tabes and paresis later is infectious over a longer period than is the case with syphilis under other conditions. Raven reported last year investigation of ninety families in which a case of metalues had developed. The interval between date of infection and the marriage was known in about half of them and it had been four years in two families, five years in one, and from six to twenty-one years in ten. It seems

as if in syphilogenous nervous affections the individuals are liable to infect others over a longer period than other syphilitics. If further research confirms this, we will have to modify our views as to when we can consent to marriage, for we have no means of knowing which of our syphilitic patients are going to develop nervous or brain affections. Only by prolonged supervision over individual cases and correlation of uniformly classified data can we hope for light on the various phases of the syphilis question.

51. **Hemorrhagic Aleukia.**—The first installment of Frank's article on the so-called "aplastic anemia" was summarized in these columns October 30, p. 1590. He refers to Selling's "model report" of a case of fatal industrial poisoning from inhaling the fumes of benzol. In this and in two similar cases, the red blood cells were comparatively little affected; the white cells bore the brunt of the attack. The result is a leuko-anemia, not an erythro-anemia, and myelophthisis is the source of the trouble. Frank reports a case of myeloid leukemia in a woman of 39 given a brief and mild course of Roentgen treatment under which the blood count returned practically to normal. The changes thus started in the blood kept on, however, until the count reached the absolute opposite of what it had been, the leukemia being superseded by aleukia. Decastello has recently reported a similar case. In both, the complete transformation occurred under Roentgen exposures of the spleen. This suggests that the spleen may have a special function in some circumstances, manifested by an inhibiting and impairing of the functioning of the bone marrow. This special function seems to be set in action by the influence of Roentgen exposures, and also by the influence of certain morbid processes in the spleen itself. Frank declares that this syndrome of morbid conditions in the spleen accompanied by subnormal numbers of leukocytes and blood platelets, brings us to the cause of toxin production in hemorrhagic aleukia. Too long it has been mistakenly included in the group of "aplastic anemias."

Deutsche medizinische Wochenschrift, Berlin

October 7, XLI, No. 41, pp. 1205-1236

53 *Medicomechanical Treatment. G. Ledderhose.
54 The Vitamins in the Diet. (Ueber Vitamine und akzessorische Nährstoffe.) H. Boruttau.
55 *Concordance Between Urochromogen and Diazo Tests in Typhoid and Typhus. M. Levy.
56 Selenium Compounds in Treatment of Cancers. (Zur Therapie maligner Tumoren der Tiere und des Menschen mit Selenverbindungen.) H. Coenen and W. Schulemann.
57 The Lime Content of Bile and Its Import in Production of Gallstones. (Der Kalkgehalt der Galle.) L. Lichtwitz and F. Bock.
58 Nystagmus After Injury of Foot of Second Frontal Convolution; Nine Cases. Noehte.
59 Gunshot and Shell Wounds of the Jaws and Their Treatment. (Die Kieferverletzungen im Kriege.) A. Stein.
60 Technic for Making Plaster Casts in Field Hospital. S. Peltesohn.

53. **Medicomechanical Treatment.**—Ledderhose discusses the indications and technic for application of medicalmechanical treatment, especially for men recovering from gunshot and shell wounds. He emphasizes, however, that improvised apparatus generally answer as well as more complicated and expensive contrivances. With them all, careful supervision is necessary to prevent harm from misdirected or excessive exercises. The main features in the whole system of medicomechanical treatment are the physician's influence on the patient's mind and spirits, and the benefit from the skilful application of water, steam and superheated air, massage and electricity.

55. **The Urochromogen Reaction in Diagnosis of Typhoid.**—Levy applied the diazo and Weiss' and Rhein's potassium permanganate test for urochromogen in the urine in 122 cases of typhoid and the Weiss and diazo tests in twenty-four of typhus. The findings were so concordant with the various tests that it is evident the simple urochromogen test can take the place of the diazo when desired. The discrepancies were found so slight and so few that they are practically negligible. The urochromogen test was especially pronounced in all the cases of typhus giving a diazo reaction; both tests were negative in three of the twenty-four cases.

(The Weiss technic was described in THE JOURNAL, June 13, 1914, p. 1886.)

Medizinische Klinik, Berlin

October 3, XI, No. 40, pp. 1093-1118

61 *Clinical Manifestations, Genesis and Etiology of Purulent Meningitis During War Time. A. Ghon and B. Roman.
62 Present Status of Psoriasis and Allied Affections. J. Jadassohn. Commenced in No. 39.
63 *Gas Gangrene and Gaseous Phlegmons. W. Pfanner.
64 *Arrest of Hemorrhage with Muscle Tissue. (Blutstillung durch thrombokinetische Muskelwirkung.) R. Pamperl.
65 Experiences in a Field Hospital. (Erfahrungen allgemeiner Art aus einem Feldlazarett des westlichen Kriegsschauplatzes.) W. Wolf.
66 Suture of the Heart Six Hours After a 3-cm. Stab Wound; Too Late for Heart to Rally. J. Frist.

61. **Purulent Meningitis.**—Ghon and Roman state that purulent meningitis with an exanthem, true Weichselbaum meningitis, has been observed at numerous points in Germany, Austria and Hungary since the war began, while before it was rare. They examined five such cases postmortem, two in adults. The meningitis that develops after a gunshot or shell wound of the head always proved a mixed infection in the sixteen cases they had occasion to examine postmortem. In two cases the proteus and the gas gangrene bacillus were involved.

63. **Gas Gangrene and Gas Phlegmon.**—Pfanner insists that true gas gangrene requires the most vigorous treatment, early amputation, or the patient is doomed. On the other hand, phlegmons with gas production are usually mild processes that heal under simple conservative measures. This distinction has not been made clearly by writers on the subject, and those who have reported "recovery from gas gangrene under conservative measures," merely mistook a phlegmon with gas for the true gas gangrene. Differentiation is often difficult, but one sign he has never known to fail. This is a suddenly developing intense pain in the limb below the wound, at a time when there is little or no production of gas and no signs to warn of the impending catastrophe. The pain is so intense that the patient clamors for the doctor. Testing the sensibility during this attack of pain shows paresthesias. The pain keeps up agonizing for an hour or two, and then stops abruptly. The limb in this area is then found completely anesthetic, pale, cold and dead. While these changes are occurring below, the discoloration of the skin and the emphysema spread and involve extensive regions.

Pfanner had studied these phenomena in three cases of true gas gangrene before the war and saved the patients by prompt amputation. Armed with this experience, he was able to differentiate true gas gangrene in the early stages in wounded soldiers and bring them through by immediate amputation. On the other hand, he was able to save the limbs of others who had phlegmons with gas, simulating true gas gangrene, but terminating favorably under conservative measures.

64. **Arrest of Hemorrhage with a Scrap of Muscle.**—Pamperl relates remarkable success in promptly arresting hemorrhage by pressing on the bleeding spot a piece of muscle tissue, taken from the vicinity, crushed a little first in a clamp, to make it stick better and bring the blood platelets more to the surface. The scrap need be only from 1 to 3 mm. thick; it sticks of itself after it has been pressed on the bleeding spot for a few seconds to two minutes. He avoids having any fascia tissue on the side turned to the bleeding spot. The history of means to arrest hemorrhage is reviewed and this muscle method is ascribed to Horsley who found it effectual on animals, hemorrhage from arteries and veins being arrested by the application of the scrap of muscle when the blood pressure did not exceed 60 or 80 mm. mercury. Horsley is said never to have published his experiences. Pamperl found it always effectual in his sixteen cases, including a number of operations on the brain.

Münchener medizinische Wochenschrift, Munich

October 5, LXII, No. 40, pp. 1345-1380

67 Number and Shape of Leukocytes in Typhus. (Zahl und Formen der weissen Blutkörper beim Fleckfieber.) M. Matthes.
68 Relapsing Diseases and Their Treatment with Salvarsan. (Rekurrenserkrankungen und ihre Behandlung mit Salvarsan.) F. Reiche.

69 Modified Technic for Electrocardiography. (Modifikation in der Aufnahme der Elektrokardiogramme von pathologischen Herzen zur Erleichterung der klinischen Diagnose.) Jaworski.
70 *Boeck's Sarcoid with Participation of Internal Organs. E. Kuznitzky and A. Bittorf.
71 *Steam Sterilization Practicable for Large Rooms. (Dampdesinfektion grosser Räume.) G. Seiffert.
72 *Artificial Pneumothorax Under Adverse Conditions. J. Gwerder.
73 Technic for Determination of Protective Ferments in Tuberculous Spinal Fluid. (Untersuchung tuberkulös-meningitischer Punktionsflüssigkeiten mit Hilfe der Ninhydrinreaktion.) V. Kafka.
74 Case for Office Wassermann Test. (Neues Besteck zur Ausführung der Wassermannreaktion im Sprechzimmer des Arztes.) R. Weiss.
75 Warning Against Training Blinded Soldiers to be Masseurs. (Die Blindenmassage.) F. Kirchberg.
76 Accidental Heart Murmurs in Soldiers. (Zur Kenntnis der akzidentellen Herzgeräusche bei Kriegsteilnehmern.) H. Ehret.
77 Differential Diagnosis of Relapsing Fever. (Rückfallfieber.) R. Cayet.
78 Afebrile Typhoid. (Fieberloser Typhus.) F. Meyer.
79 Immobilization of Fractured Femur Leaving the Knee Movable. (Oberschenkelschussfrakturen.) H. v. Baeyer.
80 Treatment of Severe Fractures and of Joint Injuries in Field Hospital. A. Heddaeus.
81 Diagnosis and Treatment of Wounds of Skull and Brain. (Schädel- und Gehirnschüsse. Unterscheidung der Tangentialschüsse.) P. Sick.
82 Arc Light Exposures and Galvanic Foot Baths Promptly Relieve Pain in Feet after Freezing. (Schnelle Heilung schwerer Hyperästhesie an erfrorenen Füssen.) K. Hasebrock.
83 Efficacy of Charcoal in Treatment of Gastro-Intestinal Catarrhal Troubles. (Ueber Tierkohlebehandlung bei Truppen in der Front.) G. Kelemen.

70. **Boeck's Sarcoid.**—This affection has hitherto been classed with the skin diseases, but a case is here reported in a man of 27 in which the lungs, spleen, liver, lymph glands and kidneys were also involved. Kuznitzky knows of only one case on record (Terebinsky) of Boeck's sarcoid with enlargement of the spleen. The nodules on the upper arm were small and exclusively in the subcutis, rolling under the finger, and no connection with the tissues above could be detected even with the microscope. The nodules were scattered over the limbs and the face was spared, contrary to the usual mode of distribution. Kuznitzky thinks that there is much to sustain the assumption that the disease is a general one at first, and that the skin is affected secondarily, the skin lesions developing symmetrically, without much difference in size. Seven other cases of Boeck's sarcoid were then examined more closely for internal manifestations, and the same lesions were evident in the lungs in all, roentgenoscopy revealing the peculiar marbling effect, while the spleen was enlarged in four, and three presented the same characteristic catarrhal aspect in the mucosa of the nose, epiglottis, pharynx and larynx. He emphasizes that none of them reacted positively to tuberculin tests, even carried to the extreme limit. The Roentgen pictures of the case described in detail show the pathologic infiltrations in the lungs, amply explaining the symptoms, and show the improvement parallel to the improvement noted in the nodules of the skin.

The young man had been supposedly healthy except for measles in childhood and gonorrhea at 21. Symptoms of difficulty in breathing and in the heart action after exertion developed about eighteen months ago, and nephritis was diagnosed after a few months. Then came gastric catarrh, vomiting, diarrhea, and extreme weakness. Red spots appeared on the legs with the earliest symptoms and have persisted unmodified to date. The leukocytes numbered 5,000; hemoglobin, 87 per cent. After a two months' course of arsenic the hemoglobin percentage was 92, the red count 5,100,000, but the whites were still only 5,100. The arsenic was not borne well and a febrile herpes zoster developed with severe neuralgia, but the general condition improved and the man gained nearly seven pounds in weight. He had lost 34 pounds during the preceding year.

71. **Steam Sterilization of Large Rooms.**—Seiffert experimented with double-walled wooden barracks, turning the steam from two traction engines (*Lokomobilen*) into a room of 1,000 cubic meters' air space. The sterilization was satisfactory in four hours. It became complete when formaldehyd was used with it, all pathogenic germs and vermin being promptly destroyed.

72. **Artificial Pneumothorax Under Adverse Conditions.**—The adhesions, etc., apparently rendered pneumothorax impracticable in the case described, but as a last resort Gwerder injected the nitrogen in the desperate hope that it might help somehow. To his surprise it remained localized directly over the cavity and compressed it in the most ideal manner, thus inducing the collapse of the lung exactly where it was needed and nowhere else, and the patient began to improve at once.

Therapie der Gegenwart, Berlin

October, LVI, No. 10, pp. 361-400

84 Chronic Septic Conditions in Tonsils, Teeth, Jaws and Nasal Sinuses, from Standpoint of Military Efficiency and Pensions. (Die chronischen Infektionen im Bereiche der Mundhöhle und der Krieg.) H. Passler. Concluded in No. 11.
85 *Advantages of Isotonic Sugar Infusions in Cholera and other Acute Diseases Impairing the Kidneys. H. Strauss.
86 *Systematic Exercises in Treatment of Tabes. (Alte und neue Uebungsbehandlung der Tabes.) L. Jacobsohn.
87 Subjective Factors Regulating What and How Much We Eat. (Das Nahrungsbedürfnis.) W. Sternberg.

85. **Sugar Instead of Saline Infusions.**—Strauss warns that salt is directly injurious to the abnormally sensitive epithelium in the kidney. He has long preached that when there is reason to suspect that the kidneys are below par, when infusion is indicated, an isotonic sugar solution should be used instead of the ordinary saline. He now urges this as the routine procedure in cholera, as in this disease the epithelium apparatus of the kidneys is almost invariably seriously impaired. The lesions in cholera resemble those with mercuric chlorid poisoning. Rumpf has stated that in his 3,000 cases of cholera anuria was the rule in all but 698, and that 57.3 per cent. of the cases with complete anuria terminated fatally. Saline infusion tends to aggravate the kidney lesions while a 4.5 per cent. solution of grape sugar answers the therapeutic purpose without damaging the kidneys and at the same time supplies in the most harmless way a certain amount of nourishment; 2 liters of the 4.5 per cent. solution represent 360 calories. It is possible that infusion of sugar solution will prove to have superior advantages over salt solution in other severe infections and intoxications with damaged kidneys.

86. **Exercise Treatment of Tabes.**—Jacobsohn emphasizes that no specialist skill is required to train tabetics to overcome their ataxia. Any physician can do it, and the mechanical aids can be improvised or dispensed with entirely in the mild cases. As the tabetic does not feel fatigue readily, he must be watched to stop short of fatigue as this would weaken the muscles. The exercises benefit even in the severest cases, as a rule, and decided improvement can be counted on in 50 per cent. of all cases. The exercises can be done in bed or on the sofa at first. Five to fifteen minutes is usually long enough for the sitting, but it should be repeated two or three times a day. It may be necessary to support the limb at first or suspend it in a sling to permit the patient to make the volitional movements. A straight, zigzag or spiral chalk mark on the floor to follow, or a book or cigar box to step over may prove useful exercises. The aim should be to train the patient in the movements needed in daily life, walking, climbing stairs, knocking, writing and buttoning garments. A typical feature of the third stage of tabes is the inability to extend the leg at the knee. The knees thus give way when the tabetic tries to stand up. The patient strives to compensate this by innervation of the extensors of the knee, and this generally results in an overcorrection. The knee is extended too far and held in this overtension. The same occurs with the hip joint, shoulder and elbow. The tendency is to overcorrection.

By thus analyzing the elements of the movements, we can see the way in which they share in the general disturbance, and the patient can thus be shown and taught how to correct it by voluntary innervation and utilization of the remnants of sensibility. The volitional muscular correction is very apt to be excessive, and this in turn requires compensation. Foerster has made a special study of this analytic method, and Jacobsohn endorses this method as great progress. He

emphasizes, however, that the psychic element in the ataxia must not be overlooked. Some patients have been frightened by what they hear and read about tabes; others have had a fall or other accident. Cautious suggestion renders good service in such cases.

Wiener klinische Wochenschrift, Vienna

XXVIII, No. 33, pp. 881-908

88 Experiences in a Field Hospital. M. Hirsch and T. Meissl.
89 Typhus in Prisoners' Camp at Marchtrenk. A. Skutetzky.
90 Single Bent Wire as Splint in Dressings. (Drahtschienenverbände.) G. Engelmann.
91 Serodiagnosis of Glanders in Man. (Zur Malleindiagnostik des menschlichen Rotzes.) F. Berka.
92 Emotional Heart Disturbances in Soldiers. H. Fried.

No. 34, pp. 909-936

93 Disturbances in Micturition from Chilling. (Störung der Harnentleerung infolge Erkältung.) G. Stiefler and R. Volk.
94 Functionally Capable Artificial Arms. (Neue Prothesen.) G. Engelmann.
95 Measures to Get Rid of Lice. E. Eckert.
96 Measures to Get Rid of Lice. N. Swoboda.
97 *Sodium Sulphate in Dysentery and Cholera. (Behandlung der Dysenterie und Cholera mit Natrium sulfuricum.) B. Ghigoff.

No. 35, pp. 937-964

98 Possible Connection between Goiter, Cretinism and Chagas' Disease. R. Kraus and Others (Buenos Aires).
99 Talipes Equinus after Wound of the Leg. (Spitzfuss nach Schussverletzung im Bereiche des Unterschenkels.) O. v. Frisch.
100 Enuresis in Soldiers on Active Service. ("Blasenschwäche" bei Soldaten.) B. Lipschütz.
101 Aluminum Plate to Protect Painful Cicatrix in Hand or Foot. (Zirkumskripte Narbenschmerzen bei Durchschüssen von Hand und Fuss.) A. Deutsch.
102 Care of Tuberculous Soldiers. C. Feistmantel and J. Kentzler.
103 Six Months in a Field Hospital. W. Pick. Commenced in No. 34.

97. **Sodium Sulphate in Treatment of Dysentery and Cholera.**—Ghigoff has treated by this means 286 patients with dysentery or cholera, including 128 quite severe cases. Only thirty-eight died, and he regards this as evidence that many were saved by this remedy. The sodium sulphate is given in a 20 per cent. aqueous solution, with a little opium. A tablespoonful of this is taken every two hours. Sometimes he gives a calomel purge first and then the sodium sulphate. With incessant vomiting, the sulphate is given in a dose of 30 c.c. dissolved in a glass of tepid water, taken all at once.

Zentralblatt für Chirurgie, Leipzig

October 9, XLII, No. 41, pp. 737-752

104 *Bloodless Radical Operation for Hemorrhoids. (Eine unblutige Radikaloperation der Hämorrhoiden durch einfache Naht.) G. Tillmann.

October 16, No. 42, pp. 753-768

105 *Embolus in Abdominal Aorta Removed by Operation. G. E. Konjetzny.

104. **Bloodless Operation for Hemorrhoids.**—No assistant is required and the operation is done under local anesthesia. Tillmann seizes the well everted nodule with a long clamp and takes a mattress suture back and forth in the tissues just below the clamp. Then the nodule is cut off close to the clamp and the raw edges are sutured together. The ends of the threads must be left long till the suturing is all done. The patient need not be kept in bed for more than eight or ten days as a rule. He has done this operation on forty soldiers and the men were ready for duty again in two weeks. In twenty-six cases the nodules were multiple.

105. **Aortotomy for Embolism.**—The operation was successfully performed. The embolus was 5 cm. long, lodged at the bifurcation of the abdominal aorta. At once afterward pulsation could be felt in both femoral arteries. The operation had been done as a last resort, the patient not being seen until thirty-six hours after the symptoms of obstruction of the aorta had developed. Necropsy revealed severe and chronic myocarditis, although the man had supposed he was in robust health.

Zentralblatt für Gynäkologie, Leipzig

October 9, XXXIX, No. 41, pp. 715-730

106 Retro-Uterine Fixation of Round Ligaments to Correct Retrodisplacement. (Retrouterine Doppelung und Befestigung der runden Mutterbänder zur Heilung der Rückwärtslagerung und Senkung.) M. Grechen.

October 16, No. 42, pp. 731-746

107 *Fourteen Years of Extended Vaginal Hysterectomy for Cancer. (Zur erweiterten vaginalen Karzinomoperation.) H. Thaler.
108 Suggestion for Uniform Cancer Statistics. (Zur Technik der zukünftigen Karzinomstatistik.) H. Thaler.

107. **Schauta's Extensive Vaginal Operation for Uterine Cancer.**—Thaler here brings the record down to date, the total number of cases of uterine cancer at Schauta's clinic, between 1901 and 1914 inclusive being 1,305. In 654 an operation was done by Schauta's "extended" technic and 133 of the women have been cured with no signs of recurrence for five years at least. This is a total proportion of 38 per cent. permanent cures. Computed according to Winter's scheme, this is an absolute cure of 17.4 per cent. of all the cases seen, and, restricting the figures to 1905-1909, we have 20 per cent. absolute cures.

Gazzetta degli Ospedali e delle Cliniche, Milan

October 13, XXXVI, No. 70, pp. 1089-1104

109 *Stained Gauze Strips for Testing Gastric Acidity. (Circa un nuovo metodo di saggio dell' acidita gastrica senza l'uso della sonda.) F. A. Galmozzi.
110 *Hemiplegia from Spontaneous Hematomyelia. (Ematomielia spontanea in amenorroica.) G. Jona.

October 16, No. 71, pp. 1105-1120

111 Vaccine Treatment of Pyelitis. (La terapia delle pieliti.) A. Fantoni.

109. **Simple and Practical Test for Gastric Acidity Without the Stomach Tube.**—Galmozzi has been testing the method recently introduced by Quadrone and Dematteis and has found it practicable and reliable, although it is an index merely of the acidity in the stomach. A strip of gauze about 4 or 5 cm. long by 1 cm. wide is dipped in a 0.5 per cent. solution of congo red, and another similar strip in a 0.5 per cent. solution of dimethylamidoazobenzol. A long thread is fastened to the two strips and both of the strips are squeezed into a capsule which the patient swallows after a test meal. When the capsule has dissolved, the strips of gauze are drawn out and the tint of the gauze strips indicates conditions as to the acid in the stomach content.

110. **Spontaneous Hematomyelia in Amenorrhea.**—Jona's patient was a young woman previously healthy except for menstrual anomalies. There was no menstruation until the age of 19, and after 20 menstruation ceased for a year, then returned twice. He assumes that a vicarious hemorrhage in the spine was the cause of the hemiplegia. It came on twenty days after the last menstruation and afterward there was complete amenorrhea for another year. There was sudden, intense pain in the spine, followed immediately by the hemiplegia. The paralysis in the arm was of the flaccid type, with atrophy, while the leg showed spastic paralysis, with no tendency to atrophy.

Hygiea, Stockholm

LXXVII, No. 8, pp. 1025-1104

112 *Syphilitic Abscess of the Lung; Improvement under Artificial Pneumothorax and Mercurial Treatment. H. Lindvall.

112. **Pulmonary Syphilis.**—Lindvall had opportunity in 1913 to watch the clinical course and examine postmortem two cases of syphilitic processes in the lungs. He recently encountered a third case, and was able to arrest the progress of the affection with specific treatment. The patient was a woman of 33, previously healthy, with no known venereal disease. Early in 1913 she developed sciatica and began to feel weak and in two months to cough incessantly. There was but little expectoration and the sputum never was hemorrhagic. The symptoms indicating a lesion in the lung developed very gradually and nothing could be found to explain it except possibly syphilis. It seemed to be restricted to the central part of the right lung; there was evidently destruction of lung tissue with formation of a cavity, but no tubercle bacilli could be detected in the sputum and inoculation of guinea-pigs was also negative. The most convincing proof of the syphilitic nature of the process was the brilliant success of specific treatment aided by artificial pneumothorax.

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Report of Cases Pointing to Purulent Infection as a Causative Factor in Mucous Colitis. J. W. Preston, M.D., Roanoke, Va.....1872

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Radium in the Treatment of Carcinomas of the Cervix Uteri and Vagina. Howard A. Kelly, M.D., and Curtis F. Burnam, M.D., Baltimore.....1874

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The Action of Radium on Cancers of the Pelvic Organs. A Clinical and Histologic Study. Henry Schmitz, M.D., Chicago.....1879

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Modern Treatment of Fractures of the Long Bones from the Orthopedic Point of View, with Clinical Observations and Conclusions. J. W. Cokenower, M.D., Des Moines, Iowa.1895

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Discussed by Drs. Hammond, Meisenbach and Cokenower.

Painful Feet. Causes and Treatment. Henry W. Frauenthal, M.D., New York 1897

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The Use of Mercury Salicylate in Syphilis. A Record of Its Influence on the Wassermann Reaction in Fifty Cases. Kent Nelson, M.D., and E. A. Anderson, M.D., Fort Leavenworth, Kan. 1905

Method of using the drug. Its slight value in the treatment of syphilis.

Cause and Prevention of Constitutional Symptoms Following Deep Roentgen Therapy. Sidney Lange, M.D., Cincinnati 1906

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Some Clinical Manifestations of Focal Infections. Sverre Oftedal, M.D., Fargo, N. D......1911

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ARTIFICIAL PNEUMOTHORAX IN THE TREATMENT OF PULMONARY TUBERCULOSIS

RESULTS OBTAINED BY TWENTY-FOUR AMERICAN OBSERVERS

THEODORE B. SACHS, M.D.

CHICAGO

American experience with the artificial pneumothorax treatment of pulmonary tuberculosis dates from 1898, when Dr. John B. Murphy[1] of Chicago described the new method and reported five cases in his oration on "Surgery of the Lung" before the Forty-Ninth Annual Session of the American Medical Association in Denver.

Previous to that, in 1882, unknown to Dr. Murphy, Dr. Carlo Forlanini of Pavia, Italy, suggested the method, following this by years of experimental work, and reported his first case of cure of an advanced unilateral case in 1895. During the last twenty years, Forlanini applied the method in a large number of cases.

The popularization of the method followed the publication, beginning in 1906, of an immense amount of experimental and clinical work by L. Brauer of Marburg, and his associates, L. Spengler and others. The introduction, in 1907, by C. Saugman[2] of Christiania, of the water manometer, for determination of the pleural space, rendered the method safer, and greatly stimulated its rapid adoption in Europe, the United States and other countries.

Following Dr. Murphy's brilliant exposition of the subject in 1898, his associate, Dr. A. F. Lemke,[3] continued the work under his direction, reporting, in 1899, fifty-three cases.

In studying these cases, I find that two were apparently in the first stage, twenty-five (or 47 per cent.) in the second, and twenty-six (or 49 per cent.) in the third. In forty-three cases (or 81 per cent.), the involvement was apparently unilateral; in ten cases (or 19 per cent. of the total), bilateral. Presence of cavities is indicated in only four cases; twenty-two, or 41.5 per cent. were febrile cases; hemorrhage was indicated in four cases. From one to five injections were given in fifty-one cases, a larger number in one case. The amount of nitrogen gas used was from 100 to 125 cubic inches in one third of the injections; from 110 to 148 cubic inches in half of the number. The shortest interval between injections was sixteen days; in 37 per cent. from three to four weeks, and in another 37 per cent. from four to five weeks. No manometer was in use at that time. The immediate results of treatment are given in fifty cases, after a period of observation from four to six months. Ten patients were sent west. Pleural effusion occurred in three cases; gas embolism with permanent hemiplegia in one case, and spontaneous pneumothorax with death in another.

Translating carefully the results given by Dr. Lemke, in fifty cases, into terms in use at present by the National Association for the Study and Prevention of Tuberculosis, we get the following figures: quiescent, four cases, or 7.5 per cent.; unimproved or worse, eight; improved, twenty-six cases, or 49 per cent.; deaths, two; sent to other climates, ten.

The untimely death of Dr. Lemke prevented the continuance of his work and publication of the subsequent results.

Following the introduction of the method by Dr. Murphy and his associate, the use of nitrogen gas compression was tried by several men in this country, notably at the Loomis Sanatorium, Liberty, N. Y., and other places. Various considerations, particularly the complications occurring in the course of treatment, led soon to the discontinuance of the work for a number of years.

Since the publication of the report of Dr. Brauer's work, the method was reintroduced in this country in 1910, among the pioneers being Robinson, Floyd and Balboni of Boston, Hamman and Sloan[4] of Baltimore, Mary Lapham of North Carolina and others. The method has grown in favor, particularly in the last three years, this paper presenting an analysis of the results of work, in this period of time, by twenty-four American observers. The results reported by them furnish a sufficient basis for the estimate of the efficacy of the method.

In many of the papers which I have studied, certain data are missing, and there is a variation in nomenclature, this rendering absolute exactitude of comparison impossible and necessitating conservative personal interpretation. I made a careful effort, by thorough study of reports of individual cases, to bring uniformity, in the designation of the results of treatment, in accordance with the scheme used by the National Association for the Study and Prevention of Tuberculosis.

The work analyzed in this paper represents the collective experience of a large number of hospital and sanatorium men all over the country, who during the

1. Murphy, J. B.: Surgery of the Lung, THE JOURNAL A. M. A., July 23, 1898, p. 151; July 30, p. 208; August 6, p. 281; August 13, p. 341.
2. Saugman, Christian: Internat. Centralbl., January, 1914.
3. Lemke, A. F.: Report of Cases of Pulmonary Tuberculosis, Treated with Intrapleural Injections of Nitrogen, with a Consideration of the Pathology of Compression of a Tuberculous Lung, THE JOURNAL A. M. A., Oct. 14, 1899, p. 959; October 21, p. 1023; October 28, p. 1077.
4. Hamman, L., and Sloan, M. F.: Bull. Johns Hopkins Hosp., February, 1913.

last several years have given considerable study to the subject.

CLASS OF CASES TREATED

Of 1,145 cases reported, the stage of disease is given in 1,028. Of this number 912, or 88.7 per cent., were in the far advanced stage; 109, or 10.6 per cent., moderately advanced; seven, or 0.7 per cent., incipient; five were cases of bronchiectasis; five pulmonary abscess; one tumor.

As shown in Table 1, the side involved is designated in 897 cases out of 1,145, or 78 per cent. of the total; bilateral involvement was present in 691 cases, or 77 per cent.; unilateral, in 206 cases, or 23 per cent. Presence or absence of cavities is given in 606 cases, or 53

TABLE 1.—RESULTS OF TREATMENT OF 1,145 CASES OF PULMONARY TUBERCULOSIS BY TWENTY-FOUR AMERICAN OBSERVERS

Name	Number	Stage	Involvement: Bilateral	Involvement: Unilateral	Number Cases with Cavities	Number with Tuberculous Complications	Satisfactory Compression	Partial Compression	Results of Treatment: Failure (Adhesions)	Unimproved	Improved	Quiescent	Arr., Arrested or Arrested	Cured	Dead
1. Von Adelung[5]	42	42, III	41	1	..		..	..	5	10	26	..	1 (or "cure")	..	..
2. Balboni[6]	70	Most, III	..	..	..		21	31	10	14	16	6	6	..	18
3. Barnes and Fulton[7]	17	17, III	17	..	7		10	6	..	5	5	1	..	..	6
4. Burns[8]	26	1, II; 18, III; 1, bronchiectasis	1	19	7	4 larynx	15	5	6	3	7	6	..	..	4
5. Chadwick[9]	43	3, II; 31, III	25	9	..		..	..	..	10	22	..	..	..	2
6. Dunham and Rockhill[10]	20	Most, III	19	1	10		..	..	4	..	14	2	..	..	..
7. Fehleisen and Rothschild[11]	44		..	..	..		..	..	3	7	33 "good results"	..	..	..	1
8. Floyd[12]	28	3, II; 25, III	..	..	..		..	..	..	1	20	..	6	..	1
9. Gray[13]	145	11, II; 134, III	90	55	136	19 larynx, 14 bowel	97	48	..	40	37	..	22 (or quiescent) ("working")	..	46
10. Harris[14]	34		20	14	..		19	12	3	1	9	..	17	..	4
11. Kessel and Taschmann[15]	29	2, II; 27, III	23	5	13	2 larynx, 1 bowel	17	9	3	6	9	10	..	..	1
12. King and Mills[16]	16	15, III; 1, abscess	15	1	6	6 larynx	..	..	6	3	2	2	..	..	3
13. Kingsley[17]	8	8, III	8	..	..		..	..	..	..	..	1	..	..	2
14. Lapham[18]	67	17, II; 48, III	49	16	48	5 larynx, 5 bowel, 1 gangrenous lung, 3 effusion, 9 empyema	41	17	5	2	1	1	18	11	29
15. Lyon[19]	74	4, I; 38, II; 32, III	62	12	..		..	..	18	31	22	..	..	..	3
16. Matson[20]	41	1, I; 2, II; 34, III; 3 bronchiectasis; 1 abscess	33	8	14	1 gangrenous lung, 5 larynx, 1 bowel, 3 effusion	18	11	4	5	9	13	3 ("apparently well")	..	7
17. Montgomery and Speese[21]	12	1, I; 1, II; 10, III	8	4	..	2 larynx	..	..	..	5	2	1	..	1 "well"	3
18. Mace[22]	34	6, II; 28, III;	34	..	24		..	..	4	4	7	..	7	3	9
19. Sachs	74	20, II; 53, III; 1 abscess	30	44	33	4 larynx	42	17	11	11	27	10	..	..	5
20. Schwatt[23]	69	67, III; 1 abscess; 1 bronchiectasis	63	6	55	19 larynx, 1 middle ear, 1 bladder, 1 spine	18	22	21	21	8	5	10	..	4
21. Schaye[24]	45	Most, III	..	..	..		21	18	6	..	..	8	..	..	9
22. Shortle and Peters[25]	110	1, I; 5, II; 104, III	99	11	..	In 37 cases: 2 bowel, 2 larynx, 1 pericardium	71	9	30	14	19	17	12	..	18
23. Voorsanger[26]	14	3, III	..	..	..		..	..	2	..	5	..	3	..	3
24. Webb, Gilbert, James and Havens[27]	83	81, (?) III; 1 abscess; 1 tumor	54+	..	25		..	..	21	10	23	26 "remarkable improvement"	..	1 (abscess)	2

5. Von Adelung, Edward: Induced Pneumothorax, THE JOURNAL A. M. A., June 20, 1914, p. 1944.
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7. Barnes, H. L., and Fulton, F. T.: Boston Med. and Surg. Jour., June 12, 1913.
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10. Dunham, Kennon, and Rockhill, C. S.: Therapeutic Pneumothorax as a Palliative Measure, Safeguarded by Stereoroentgenograms, THE JOURNAL A. M. A., Sept. 13, 1913, p. 826.
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15. Kessel, Leo, and Taschmann, Max: A Study of Twenty-Nine Cases of Advanced Pulmonary Tuberculosis Treated by Artificial Pneumothorax, Arch. Int. Med., August, 1914, p. 210.
16. King, H. M., and Mills, C. W.: Am. Jour. Med. Sc., September, 1913.
17. Kingsley, C. R., Jr.: New York Med. Jour., Sept. 26, 1914.
18. Lapham, M. E.: Am. Jour. Med. Sc., April, 1912, supplemented by personal communication.
19. Lyon, J. A.: Boston Med. and Surg. Jour., Sept. 17, 1914.
20. Matson, R. C.: Northwest Med., January and August, 1914.
21. Montgomery, C. M., and Speese, J. F.: Pennsylvania Med. Jour., February, 1914.
22. Mace, L. S.: Report of Thirty-Four Cases of Artificial Pneumothorax, THE JOURNAL A. M. A., March 13, 1915, p. 897.
23. Schwatt, H.: Tr. Eleventh Annual Meeting, National Association for the Study and Prevention of Tuberculosis.
24. Schaye, Milton: Artificial Pneumothorax, THE JOURNAL A. M. A., March 21, 1914, p. 900.
25. Shortle, A. G., and Peters: New Mexico Med. Jour., January, 1915, supplemented by personal communication.
26. Voorsanger, W. C.: Palliative Effect of Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis, THE JOURNAL A. M. A., May 9, 1914, p. 1450.
27. Webb, G. B.; Gilbert, G. B.; James, T. L., and Havens, L. C.: Tr. Tenth Annual Meeting, National Association for the Study and Prevention of Tuberculosis.

per cent. of the total. Of the 606 cases, cavities were present in 378, or 62 per cent. The presence of tuberculous complications is given in 489 cases, or 43 per cent. of the total. The number of tuberculous complications was 112, or 23 per cent. of the 489 cases in which complications were recorded. Of the 112 complications, sixty-eight involved the larynx, twenty-three the bowel, and fifteen were either empyemas or pleural effusions.

It is apparent from the large proportion of far-advanced cases, 88.7 per cent. (with bilateral involvement present in 77 per cent., cavities in 62 per cent., and serious tuberculous complications in 23 per cent.), that artificial pneumothorax is being tried at present in this country chiefly in very advanced cases unimprovable under ordinary sanatorium regimen. This must be taken into consideration in judging the "immediate" and "subsequent" results obtained in 1,145 cases analyzed in this paper.

The degree of compression obtained in individual cases, as judged by physical signs and subsidence of constitutional disturbance (in some by Roentgen-ray plate and fluoroscope), is given in 757 cases, or 66 per cent. of the total number reported. Of this number, satisfactory compression was obtained in 390 cases, or 51.5 per cent.; partial, in 205, or 27 per cent.; failure, in 162, or 21.5 per cent.

IMMEDIATE RESULTS

The results of treatment, as given in 1,108 cases (out of 1,145), can be designated as in Table 2.

TABLE 2.—SUMMARY OF RESULTS OF TREATMENT IN 1,108 CASES REPORTED BY TWENTY-FOUR AMERICAN OBSERVERS

	No.	Per cent.			No.	Per cent.	
Failure (failure 152, very small amounts 10)	162	14.6	49.1%	Improved	323	29.2	21.7%
Unimproved	203	18.3		Quiescent	119	10.8	
Dead	180	16.2		App. arrested (or arrested)	105	9.5	
				Cured	16	1.4	

Sixty-nine, or 6.2 per cent., were working.

As in over 90 per cent. of these cases the result was recorded either during the course of treatment or a few months after its discontinuance, and in only 10 per cent. from a few months to three years after discontinuance, the results should be designated as "immediate."

The method was unproductive of *any* beneficial effect in almost half of the cases (failures, unimprovements and deaths amounting to 49.1 per cent.); 29.2 per cent. were "improved," the improvement being, probably, of limited duration in the majority of these cases; 21.7 per cent. is the total of the "quiescent," "arrested" and "cured" cases.

Thus the *immediate* beneficial result of artificial pneumothorax treatment of these 1,108 cases was mostly palliative in 29.2 per cent. and *apparently* durable in 21.7 per cent.

A comparison of the results obtained by the American observers with the results recorded in 224 cases by Brauer, Spengler and Zink,[28] after a period of observation extending from six months to five years, is given in Table 3.

The total percentage of failures, unimprovements and deaths in the American cases was 49.1, as compared with 42.9 in the cases reported by Brauer, Spengler and Zink. It is apparent that with the class of cases selected at present for artificial pneumothorax, the method is either inapplicable or is unproductive of *any* beneficial effect in almost half of the cases.

Most of the "improvements" (American 29.2 per cent.; Brauer, Spengler and Zink, 31.2 per cent.) can be classed under the head of "palliative effect."

The group of "quiescent" cases (American 10.8 per cent.; Brauer, Spengler and Zink, 9.8 per cent.) includes, in all probability, a proportion of "durable results," a term which can be unequivocally applied only to almost all the "arrested" or "cured" cases (American 10.9 per cent.; Brauer, Spengler and Zink, 16.1 per cent.).

SUBSEQUENT COURSE OF ARTIFICIAL PNEUMOTHORAX CASES

The efficacy of artificial pneumothorax treatment can be judged only by the subsequent course, through a long period of years, of a large number of cases. In studying the American literature and some of the European, I was unable to gather any voluminous data bearing on this important question. Some figures of interest are given in Tables 4 and 5.

It may be a conservative estimate to say that, with the present technic and the class of cases treated, the percentage of durable results ("arrests" or "cures") is about 12 per cent., while in more than double this number (29.2 per cent. of 1,108 cases analyzed in this paper), a palliative effect is produced, which is of variable duration. The sum total is a distinct increase of the chances of the advanced case which does not respond to the usual methods of treatment.

28. Zink: Internat. Centralbl. f. d. ges. Tuberk.-Forsch., January, 1914.

TABLE 3.—COMPARISON OF RESULTS OBTAINED BY AMERICAN AND SOME EUROPEAN OBSERVERS

	American Observers			European				
	No.	Per cent.		Zink (Observed Six Months to Two Years) No.	Brauer and Spengler (Six Mos. to Five Yrs.) No.	Total No.	Per Cent.	
Cases	1,108			110	114	224		
Failure	.....	14.6		29	26	55	24.6	
Unimproved	.....	18.3	49.1	16	6	22	9.8	42.9
Dead	.....	16.2		19 ("worse") (number dead?)	19	19	8.5	
Improved	.....	29.2		34	36	70	31.2	
Quiescent	.....	10.8		22 ("working")	...	22	9.8	
Arrest or cure	.....	10.9	21.7	9 (cured or working)	27	36	16.1	25.9

SELECTION OF CASES FOR ARTIFICIAL PNEUMOTHORAX

Various problems enter into the consideration in the selection of cases for artificial pneumothorax.

1. In less than one third of far-advanced cases (29.2 per cent. of "improvements" in the 1,108 cases reported by American observers), the effect is chiefly palliative, slightly or markedly, lasting a variable period of time.

In the same class of cases, only slightly more than half of the immediate "apparently" durable results (21.7 per cent. of quiescent, arrested or cured cases out of a total of 1,108 analyzed in this paper) stand the test of time as shown by the smaller percentage of 12.3 in cases under observation from a few months to seven years after "reexpansion" (Table 5).

2. A free pleural space is essential in the attainment of "satisfactory compression" (effective pneumothorax). In far-advanced cases, similar to the 1,108 analyzed in this paper, the pleural space is usually completely obliterated in about 20 per cent. and partially in more than 30 per cent.

consideration of lung compression. Numerous factors will determine the decision, such as rapid extension of the process, marked constitutional disturbance and rapid impairment of the general condition, etc. The preliminary observation of the cases should be thorough, by the use of all the clinical and laboratory methods and with the aid of Roentgen examinations.

It is the gradually forming consensus of opinion among the majority of observers that the best results can be obtained before the occurrence of extensive adhesions, marked involvement of the opposite lung and the irreparable deterioration of the general resistance.

DANGERS AND COMPLICATIONS INCIDENT TO THE PRODUCTION OF ARTIFICIAL PNEUMOTHORAX

With the gradual perfection of technic and a more careful selection of cases, accidents occurring in the course of pneumothorax treatment are gradually diminishing in number. Nitrogen gas should never be permitted to enter until the manometer establishes the connection with the free pleural space, by sustained

TABLE 4.—SUBSEQUENT COURSE OF CASES OBSERVED FROM ONE-HALF TO SEVEN YEARS

	No. Cases	Failure	Unimproved	Dead	Improved	Quiescent	Arrest or Cure
Balboni (a few months to 3½ years)	70	10	14	18	16	6	6
			60%			17.1%	
Brauer and Spengler (½ to 5 years)	114	26	6	19	36		27
			44.7%			23.7%	
Saugman (½ to 7 years)	200	.....			5		15
Total	384					Average 14%	

TABLE 5.—SUBSEQUENT COURSE OF "REEXPANSION" CASES (OBSERVED FROM THREE MONTHS TO SEVEN YEARS)

	Total No. Cases	Treatment			Present Condition of Reexpansion Cases			
		Reexpansion	Suspended	Active	Improved	Quiescent	Arrest	Cure
Balboni	70	17	8 months to 3½ years	3	3	5	6	..
Saugman	200	30	½ to 7 years	..	5	..	..	15
Lapham	67	14	A few mos. to 4 years	..	..	14 ("excellent condition")		..
Shortle	110	15	A few mos. to 2½ years	..	..	15 ("working")		..
Total	447	76		3	8	55 or 12.3 per cent. of the total		

A comparison of sixty-six "partial compression" cases, with 153 cases in which satisfactory compression was obtained (out of the American series, Table 1), gives, in the "immediate" results, 18.2 per cent. of quiescent and arrested cases for the "partial compression" group, and 47 per cent. of same results in cases with satisfactory compression.

3. The condition of the opposite lung is of vast importance in the attainment of durable results. Comparing the "immediate" results of artificial pneumothorax treatment in ninety-one unilateral cases and 162 bilateral, out of the series of cases by American observers, we find that the percentage of unimprovements and deaths in unilateral cases was twelve, in bilateral cases forty-three; the percentage of quiescent and arrested cases was 50.5 in unilateral and 24.7 in bilateral.

4. Failure of progressive cases of pulmonary tuberculosis to respond to sanatorium methods of treatment (absolute rest, open air, etc.), after a sufficient period of trial, should be the basis, regardless of stage, for

negative pressure and free oscillations. Asepsis is another important factor. Local anesthesia of the entire needle track is insisted on by many observers for the prevention of pleural shock. Excessive pressure within the pleural cavity should always be avoided. Even positive pressure is not entirely necessary for the production of effective compression. An important exception should be made in cases of severe hemorrhage, in which bleeding persists until a marked positive pressure is established. The method should never be employed in the presence of severe cardiac complications.

Saugman reports fourteen serious mishaps and one death in a series of ninety-eight cases and 2,000 punctures, in his early experience, in the period from 1906 to 1910. From 1910 to 1912, he had two mishaps and one death in sixty-three cases and 1,200 punctures. Since 1912, with more careful technic, he reports no mishaps, in forty-nine cases and 2,000 punctures. This has reference chiefly to pleural shock and air embolism.

Pleural effusion, the most frequent complication in the course of artificial pneumothorax, is variously ascribed to infection, to progressive irritability of the pleura, caused by trauma, to slowing of lymphatic circulation in the compressed lung, to the breaking of tubercle through the pleural surface, etc. The frequency of its occurrence, in the experience of some observers, is dependent on the extent of the process and duration of treatment. Strict asepsis and careful technic may be a considerable factor in its prevention. At present, its incidence is estimated at from 30 to 50 per cent.

Of 784 cases, reported by fifteen American observers, who recorded in their reports the frequency of this complication, pleural effusion occurred in 113, or 14.4 per cent., of the total number of cases. The small percentage may be due to the inclusion of a large number of cases reported in the early period of treatment and omission of small effusions, the presence of which can be ascertained only by frequent physical and Roentgen examinations.

There is considerable difference of opinion as to the effect of effusion on the further progress of a case treated by gas compression. While improvement does occur in a certain percentage of cases, occurrence of effusion is regarded by most experienced observers as a complication affecting the future outlook of a case. This is borne out by the frequent occurrence of adhesions preventing future compression and frequent extension of the process in the opposite lung. We are in need of more comprehensive data on this subject.

Gas embolism is a rare incident in pneumothorax therapy. Its onset is sudden. The manifestations vary from temporary unconsciousness, convulsions, temporary hemiplegia and gradual recovery, or fatal termination in a few hours to two or three days, to the gravest form, in which a severe coma without any preliminaries results in almost instant death.

The air or gas may come through the needle, from the lung (cavity) or pleural space. The pulmonary veins, because of the negative pressure in these vessels, present the most favorable condition for the entrance of gas. The incident is more frequent when pleural adhesions are penetrated by the needle, the gas being introduced through one of the veins into the circulation (Brauer). Fatal termination results from the final lodgment of air or gas in the coronary arteries or vessels of the brain (Saugman). According to Wolff-Eisner, thrombi are responsible for some of the incidents described under the head of air or gas embolism.

It is agreed that this grave incident is almost impossible with intelligent interpretation of manometer findings (sustained negative pressure and wide oscillations).

According to Matson, "this accident should belong to the first historic period of pneumothorax therapy."

In Saugman's experience, one death occurred between the years 1906 and 1910 (with ninety-eight patients and 2,000 punctures); between 1910 and 1912, one death (sixty-three patients and 1,200 punctures); between 1912 and 1914, with more careful technic (forty-nine patients, 2,000 punctures), no mishaps.

Reports of this rare but grave incident are scattered over the European literature (Brauer, four cases; Saugman, 2; Zink, 1, etc.). Forlanini encountered the accident four times in 10,000 operations (two fatal).

Of 1,058 cases treated by twenty-two American authors, three incidents of gas embolism occurred in a group of 191 cases reported by three authors, while 867 cases, treated by nineteen authors, were free from the incident. The latter group includes seventy-four cases treated by the author (700 injections).

The incidents described, in the American and European literature, under the name of *pleural shock* (pleural reflex or eclampsia) vary from slight manifestations of faintness to disturbances of various degrees of the circulatory, respiratory and nervous motor and sensory systems. With few exceptions, the manifestations, as given, are mild, of passing nature and with no after-effects. A few fatal terminations were recorded by European observers.

The present tendency (particularly Brauer) is to ascribe many of the grave manifestations included under "pleural reflex or shock" to "gas embolism."

The mechanism of production of pleural reflex is given by Russell[29] as follows: "afferent impulses conveyed to medulla along vagus, whose terminal fibers rendered unduly sensitive by compression, or inflammation are irritated by the needle." Death is generally ascribed to spasm of cerebral or cardiac vessels.

Anesthesia of the needle track (novocain from 0.5 to 1 per cent., epinephrin 1:10,000) through the skin, the underlying tissues and pleura, is urged by most observers as a preventive of this complication, and yet the incident was absent in groups of cases treated without any anesthesia (E. A. Gray, 145 cases, 1,200 injections; myself, seventy-four cases, 700 injections, and others).

Saugman reports one case of pleural shock in 104 cases (paralysis of heart; death); Forlanini, twelve occurrences in 134 patients, 10,000 injections.

Of the 1,058 cases in the American literature, analyzed in this paper, pleural shock occurred twenty-six times, or in 2.5 per cent. of cases. There were no fatalities.

Of the 1,122 cases reported by twenty-four American observers in the last two years or more, the incidence of various complications, occurring in the course of treatment, was as given in Table 6.

TABLE 6.—COMPLICATIONS REPORTED BY AMERICAN OBSERVERS

Complications	No.
Pleural effusion	113
Extension of process in opposite lung	58
Bleeding of other lung	7
Pleural shock	26
Gas embolism	3
Spontaneous pneumothorax	10
Bilateral pneumothorax	2
Pyopneumothorax	13
Cardiac dilatation and heart failure	4
Torsion of heart and blood vessels	1
Total	237*

* Twenty-one per cent. of the total number of cases.

CONCLUSION

Experience with artificial pneumothorax in the treatment of pulmonary tuberculosis is gradually modifying the sphere of its application. The trend is toward its use, regardless of stage, in all progressive cases (particularly with unilateral involvement) which fail, after sufficient trial, to respond to strict sanatorium regimen.

Complications incident to the employment of this method, the great importance of continuous strict observation and thorough clinical, laboratory and Roentgen study of each individual case, the rest periods essential after each reinflation, the inability

29. Russell, quoted by Fishberg, M.: Med. Rec., New York, Jan. 2, 1915.

of outlining in advance the time of reinflations, in short, the close dependence of each successive step in pneumothorax therapy on the varying condition of the patient, are all factors which call, in the majority of cases, in the interest of safety and best results, for hospital or sanatorium supervision, at least for a few months, of each individual case in which the method is being applied. Close attention to every important detail of technic, as well as strict asepsis, is also less of a problem, under such conditions, regardless of the excellent results obtained by some observers, in dispensary and office practice.

The present tendency, grown out of experience, is toward greater conservatism in the selection of cases, a selection based on thorough preliminary study and full consideration of the possible effect of compression in the individual case. Conservatism needs to characterize each successive step in the gradual attainment and subsequent maintenance of a satisfactory compression, with avoidance of too frequent reinflations and excessive intrapleural pressure. This attitude is very important, with a method the application of which cannot be subject to rule but is dependent on the condition of each individual case.

Through improvement of various details of technic and greater conservatism of action, pneumothorax therapy is gradually finding its defined place in the treatment of cases of pulmonary tuberculosis which do not yield to other methods.

25 East Washington Street.

LESIONS OF THE LUMBOSACRO-ILIAC REGION

A STUDY IN THE VARIOUS TYPES *

HARRY LESLIE LANGNECKER, M.D.
SAN FRANCISCO

In asking your indulgence for a few minutes in the consideration of lesions involving the lumbosacral and the sacro-iliac articulation, I do so because of the importance of recognizing the underlying conditions as early as possible.

In an endeavor to understand the mechanism of the lumbosacral joint, with its many peculiarities, and the too frequently resulting strains to the sacro-iliac joints, it must be remembered that the lumbosacral joint is intimately associated with the sacro-iliac joint function.

Statistics, which I have gathered from my study of occupational or industrial diseases, show lesions of the lower back to be one of the most frequently occurring conditions.

Anatomic variations from the normal structure of the bones of this region are very common. Very often these anomalies do not become evident until excessive or repeated joint strain bring them under observation.

In the study of cases representing the various types, it is impossible to isolate a type as belonging to only one group. For a traumatized joint may later become the seat of an inflammatory process. An abnormal bone formation does cause a lateral curvature. Relaxed ligaments have produced a defective balance of the whole body. With this point in mind, however, namely, the interrelation of the different types, I have grouped these lesions into, first, traumatic, with or without anatomic variations; second, static; and third, toxic.

In the traumatic group are included cases in which injury is the principal factor. These lesions are further classified into, first, acute types, in which the trauma is recent and primary, and second, chronic, in which the trauma is recurrent and of longer duration.

In the acute types the lesion is unilateral, with or without bone displacement. It is the result of direct strain or indirectly through muscular action. In these cases, the sacro-iliac joint receives the entire force of the effort and the bony surfaces of the sacrum or the ilia may slip, or a rupture of the ligaments may occur.

These conditions are demonstrated when bending forward in the act of lifting a heavy object; or in jumping and giving the trunk a sudden twist on the pelvis; or when in swimming and diving, quick hyperextension of the lumbar spine occurs; or during childbirth, when instrumental interference is necessary; or during or following surgical operations with a general anesthesia.

The symptoms depend on the amount of injury rather than on the severity of the cause producing it. Pain usually accompanies the injury. It is sharp and lancinating in character and is increased by all motions. It is present about the affected joint or is referred up the back, over the buttocks, or down the leg. Deformity shows as a forward stoop, a list to one side or flexed leg at hip. Regular tests demonstrate all motions limited. The local signs are obliteration of the lumbar curve, tenderness, or very often, a slight bony prominence over the injured area. The Roentgen ray may show an anatomic variation or a displacement of one of the bones of the lumbosacro-iliac articulations.

In the chronic types, because of repeated strains, there is relaxation with occasional displacement. Adhesions are present. The lesion is unilateral although later involvement of the other sacro-iliac joint does take place. Cases vary considerably in character. For example, lesions may result from repeated movement of a broad transverse process of the fifth lumbar vertebra pressing on the ilium until a backward displacement of the sacrum on the opposite side is produced, as in wood chopping; or continual slipping of the flattened articulating processes of the fifth lumbar vertebra, as in automobile repairing; or too often sliding of articulating surfaces of sacrum and ilia on each other, as in marked relaxation of the joint; or subluxation of an intervertebral cartilage, as in repeated displacements of the lumbosacral joint.

The symptoms are intensified with each new strain. Pain may be slight or severe. Irritation of the lumbosacral nerves, after their emanation from the vertebral foramina, gives pain over buttocks, hip and down the leg. This is increased by standing or walking and is less severe after lying down. Deformity may show as a decided forward bending or list to one side with prominence of the hip on the opposite side. The lumbar spine is flattened. In many of these cases the deformity can be corrected, but relapse occurs if sufficient support is not used. Regular tests elicit limitation of motion only in certain directions. Locally, there is considerable tenderness over the affected joint. Referred pain can be started by pressure in this

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

region. There is spasm of the muscles; movement of the joint is guarded and painful. The Roentgen ray usually demonstrates separation or displacement of bones of the joint. Bony anomalies likewise are thus discovered.

In the static group, faulty posture is the most striking feature presented. The muscles and ligaments and therefore the joints of the lumbosacro-iliac region are relaxed. The continual strain on these joints increases the lumbar curve and tilts the top of the pelvis forward. In the variation from the proper poise, the mechanics are disarranged and the physiologic functions of the body are disturbed. This type of lesion is usually bilateral.

A defective posture may result from general debility, which reduces the quality of the muscles and ligaments; or anatomic variations, which may cause a lateral curvature and later a scoliosis; or incorrect clothing, which may compress the trunk or give inadequate support; or lipomatosis or general increase in weight, which increases the strain on the muscles and ligaments of the pelvic girdle; or faulty foot or leg conditions which give unequal base of support; or pregnancy when relaxations of the pelvic joints are very marked; or certain occupations which require fixed positions; or sagging abdominal walls with the accompanying visceroptosis. The long, slender, loose-jointed type of individual, with few exceptions, makes up the greatest number of cases in this group.

The symptoms of the static type are easily recognized. The onset is gradual. The slumped or relaxed attitude in standing is marked. There is a general weakness in walking and standing rapidly causes fatigue. Patients cannot lie comfortably on the back, are restless at night, usually sleep on the side with the thighs flexed. Backache is most constant. Locally, tenderness over all the joints is found. There is always a lordosis, while the posterior back muscles are in a state of spasm. The regular tests show unusual mobility and relaxation of the joint. The Roentgen ray is useful in this group as a method of eliminating the other group types.

In the toxic group are found those types of cases in which the inflammatory element predominates. Continual irritation of the lumbosacral and the sacro-iliac articulation, usually with relaxation, produces a chronic congestion in this region and thus infection is easily started.

While tuberculous, syphilitic, typhoid and gonorrheal lesions frequently occur in this region, still infection, or toxins, primarily involving the nasal, oral, pharyngeal and gastro-intestinal tracts, produce a pathologic process — an osteo-arthritis — which demands much attention in diagnosis and prognosis. Extension of disease from the pelvis, or following gynecologic procedure, or obscure toxemias resulting from improper metabolism, gradually settle in this region and cause an arthritis.

The symptoms show the onset to be gradual, and secondary to inflammation or toxemia, present elsewhere in the body. When acute, the joints are swollen, the soft tissues are thickened and very tender. The condition is aggravated by standing, sitting or walking. The joints are extremely sensitive to any motion which will induce strain on the pelvic girdle. In the chronic cases, a burning, aching pain is experienced over the sacro-iliac area. Pain, usually dull in character but with sharp paroxysms, may be referred up the back, over the buttocks and hips, and down the posterior aspect of the leg to the heel. Frequently there is disturbance of sensation in the lower extremities. Posture does not relieve the pain. It is in this group of cases that narcotics are resorted to most often to overcome the pain. The deformity causes the patient to hold the lower back stiffly. A marked forward bending or a list to one side is present. There is no lumbar curve, but a prominence of the dorsal spine. The regular tests are usually restricted in every direction. Locally, the flat, rigid lumbar spine, the muscular spasm, the limited area of tenderness and the impossibility of attempted motion are observed. The Roentgen ray usually shows a pathologic process involving some part of the lumbo-sacro-iliac articulation.

In conclusion, I wish to state that differentiation of the various types is not difficult if one bears in mind the fact that in the traumatic group, injury with the sudden onset of symptoms is most important; in the static group, the defective posture with marked relaxation of the joints is present; and in the toxic group, the history of an inflammatory process with the tendency to fixation of the joints is found.

Surgical Division, Leland Stanford Junior University, School of Medicine.

ABSTRACT OF DISCUSSION

DR. C. C. CRANE, San Francisco: While I wish to elaborate somewhat on the anatomic variations to which Dr. Langnecker referred, I also wish to challenge his statement that "Posture does not relieve pain." Radiograms which I have show various mechanical faults which are productive of pain, deformity and disability. I have divided them into three classes: potential trouble makers, actual trouble makers and proximal trouble makers. The symptoms presented by the patients were various and numerous but all of them were relieved by conservative measures.

DR. FRED. J. FASSETT, Seattle: I think it would not be out of the way to have some one who has the facilities and the clinical material make a routine examination of a large number of normal adults, so that we may form some sort of an estimate as to how many people are going about with large transverse processes and other anatomic variations without any symptoms at all. Of course, it is only the ones with symptoms that come to the physician, and it seems to me that we have a very one-sided view of the subject thus far.

DR. LEONARD W. ELY, San Francisco: In the orthopedic department of Stanford University with a complete outfit and all the facilities to work with, we are entirely at sea on this subject of lumbo-sacro-iliac lesions. I have become discouraged trying to replace these so-called slipped joints —in trying to get the painful ones relieved—and we are ready and eager to put all the facilities that we have at the disposal of anybody who will undertake to help us clear this matter up. I have become discouraged, but a ray of hope, I may say, has broken on me from what Dr. Langnecker has said.

DR. J. T. RUGH, Philadelphia: In regard to Dr. Fassett's request, I had one of the leading roentgenologists in Philadelphia for the past six months make a study of the cases which came under his care for all abdominal conditions. He has told me, after looking over a series of probably four or five hundred of these cases, that he finds some anomalies in this part of the spine in a very large percentage of the cases. In fact he is coming to look on it as rather unusual to find the normal.

DR. JOHN RIDLON, Chicago: I should like to ask that in closing, Dr. Langnecker say whether in any of these strained or slipped joints—sacro-iliac or lumbosacral region—he has had anything in the nature of atrophy of the limb develop on the painful side.

DR. C. R. MCCLURE, Portland, Ore.: At present through the courtesy of Dr. Coffey's office in Portland we are having observations made on this region of the lower back, and I hope at some future meeting to make some reports concerning our study of this region. We see a great many of these cases, and, like many of the men here, I sometimes doubt the value of the Roentgen ray in a diagnostic way because of the frequency with which these anomalies are found in people who have no symptoms one way or the other.

DR. ROLAND MEISENBACH, Buffalo, N. Y.: That the pelvic joints, especially the sacro-iliac and sacrolumbar, are so frequently involved in the sciaticas and the backaches which are met with, can no longer be doubted. The results of the treatment for these conditions, with the relief given the patient, have spoken for themselves. I believe that the most important matter for our consideration in diagnosis is to differentiate between the sacro-iliac and the sacrolumbar lesions. It is true that in some we have both these joints involved; it must also be remembered that occasionally we may have backache due to the strain or injury to the sacrolumbar joint in a person who may have other conditions present; as, for instance, a very heavy person with leukemia may sustain an injury to the sacrolumbar joint due to the actual weight of the abdomen, and in relieving the strain we are naturally relieving but one of the symptoms. Another type of sacro-iliac and sacrolumbar lesion which is more frequently met with is one of trauma, in which there also exists pelvic inflammation, or glandular inflammation, which has attacked the pelvic joints or has weakened them so that they are subject to trauma. One has only to remember his anatomy and note the variations in the sacrolumbar joint, both as regards the articular processes and also the variations in the transverse process in different individuals. I have met many times a type of sacrolumbar lesion in which the patient has had recurrent backache, which I am sure has been due to a very shallow sacrolumbar articulation. In this type it has been sometimes difficult to illustrate the condition by means of a roentgenogram. In regard to the roentgenogram, I cannot agree with Dr. Langnecker. If he had used the word "occasionally" instead of "usually," I think it would have been more to the point. In cases with a long or thickened transverse process of the fifth lumbar vertebra, which may or may not articulate with the sacrum or ilium, or in cases in which the sacro-iliac joint has opened and the sacrum has dropped or tilted, it is not very difficult to illustrate by means of the roentgenogram; but those cases (and they are frequently met with) in which the sudden movement of the body may quickly incapacitate the individual, causing such a severe pain that the person is unable to take another step, are rather difficult to illustrate by means of the roentgenogram. I believe this type of case to be that of the shallow sacrolumbar joint, in which the joint articulations are of such construction that they easily become dislodged. Many of these do not seek relief at the first attack, but usually after having rested or having had several attacks. Also in the type of loose sacrum it is difficult to demonstrate by means of the roentgenogram; that is, the single flat plate will show nothing, but the stereoscopic roentgenogram will often show the sacrum slightly tilted. Dr. Langnecker has covered the ground of symptoms very well. One of the best illustrations of the severe sciatica which was caused by motion in the sacro-iliac joint is that of metastatic carcinoma of the sacrum following, as in the case I have presented, a removal of the breast for carcinoma. In this case, the slightest motion of the ilium on the side in which the sacro-iliac joint is involved causes a severe sciatica.

DR. C. L. LOWMAN, Los Angeles: We have a skeleton which shows an anomaly of the first sacral—just a small lateral process on one side, like a lumbar vertebra, the full length and width of ala on the opposite side, with a joint between it and the second sacral; an absolutely flat articular process on the right side, and a vertical process on the other. This allowed a great deal of rotation of the sacrolumbar segment forward around this vertical process as an axis, with a narrowing of the posterior foramina. Another similar case was presented to me by my radiographer. This case was treated by a chiropractor as a tuberculous spine. The roentgenogram showed an assimilation of the first sacral, which tried to be a lumbar on one side.

DR. H. L. LANGNECKER, San Francisco: In reply to Dr. Ridlon's question, I would say that in a great number of cases, especially those of the lumbosacral region, there seems to be an atrophy of the muscles of the anterior part of the thigh, the atrophy of the other muscles having been consistently noted.

DR. JOHN RIDLON, Chicago: By measurement?

DR. H. L. LANGNECKER: Yes, by measurement. It is one of the signs. These conditions are usually studied by stereoscopic roentgenograms; all the important ones were in my cases. I found that the study of this class of cases was extremely interesting. There is much, as yet, to be said about them. I can only repeat what one of the orthopedic surgeons—a man who has done more, probably, on lesions in the sacro-iliac region than anybody else in the country—told me. He said that there was a great deal yet to be known about lesions in this part of the body, and that he thought when the final verdict was given it would be an anatomic one.

LYMPHOID MARROW AND TUBERCULOSIS

AN EXPERIMENTAL STUDY *

LEONARD W. ELY, M.D.
SAN FRANCISCO

In a paper read before this section at its meeting in 1914, Mr. John Fraser made the statement that red marrow was immune or practically immune to tuberculosis. This statement was based on the results of attempted inoculation of the long bones of laboratory animals, whose marrow is of the red or lymphoid variety. The question is of great importance, and we have been conducting a series of experiments in the laboratories of the Stanford School of Medicine to test the accuracy of Mr. Fraser's conclusions.

Dr. John F. Cowan and I conducted one series, on which we shall report later. Dr. Jean Oliver and I conducted another series which I shall report here.[1]

The animals used were rabbits and guinea-pigs. With the former, bovine tubercle bacilli were employed (Cutter Laboratory bovine strain, K 9), with the latter, human bacilli from a virulent strain supplied by Dr. Hirschfelder. The animals were anesthetized with ether, and the limb to be operated was shaved. Strict asepsis was observed, a small incision was made in the leg, a trephine opening was made into the tibia, and with a hypodermic needle a few drops of a suspension of bacilli in normal salt solution were injected directly into the marrow. The wound was then sewed up with catgut and was painted with collodion.

At varying intervals before the operation and sometimes after it, a 1 per cent. solution of trypan blue was injected into the animals, 20 c.c. into the ear vein of the rabbits, and 2 c.c. subcutaneously into the

* From the Leland Stanford Jr. University Laboratory of Surgical Pathology.

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* Owing to lack of space, this article is abbreviated in THE JOURNAL by omission of protocols of animal experiments. The article appears in full in the Transactions of the section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

1. After the main question of the vulnerability of the marrow had been determined, the work was divided. Dr. Oliver continued his investigation on the histologic features of the tubercle.

guinea-pigs. The animals were killed at varying intervals after the operation.

Our intention was usually to inject into the metaphysis of one tibia and into the central canal of the other, but in point of fact the canal extends so high in the tibia that practically all injections were into it.

The specimens were hardened in 10 per cent. formaldehyd solution or in alcohol, dehydrated in alcohol, mounted in paraffin, and stained with hematoxylin and eosin, with the Van Gieson stain, and for tubercle bacilli with the Ziehl stain.

A complete description of the findings is appended. The results will be summed up here.

EXPERIMENTS ON RABBITS

Rabbit 41 0: Killed fifty-one days after injection. Right tibia, tuberculosis present macroscopically and microscopically. No tubercle bacilli found. Left tibia kept for gross demonstration. Tuberculosis demonstrated macroscopically in it.

Rabbit 42 0: Killed forty days after injection. Both right and left tibias showed tuberculosis and tubercle bacilli present.

Rabbit 43 0: Killed fifty-four days after injection; blocks lost.

Rabbit 44: Killed on day of operation. Right and left tibias showed neither tuberculosis nor tubercle bacilli.

Rabbit 45: Killed thirty-three days after operation. Both right and left tibias showed tuberculosis macroscopically and microscopically, but no tubercle bacilli in either.

Rabbit 46: Killed thirty-two days after operation. Both right and left tibias showed tuberculosis macroscopically and microscopically; tubercle bacilli in neither.

Rabbit 47: Killed thirty days after operation. Both right and left tibias showed tuberculosis macroscopically and microscopically; tubercle bacilli were found in the right, none in the left.

Rabbit 49: Killed one day after operation. Right and left tibias showed neither tuberculosis nor tubercle bacilli.

Rabbit 75: Killed two days after operation. Right and left tibias showed no sign of tuberculosis or tubercle bacilli.

Rabbit 76: Killed seven days after operation. Both tibias showed neither tuberculosis nor tubercle bacilli.

Rabbit 77: Died fifteen days after operation. Both tibias showed neither tuberculosis nor tubercle bacilli.

Rabbit 78: Killed twelve days after operation. Right tibia showed tuberculosis microscopically and a few tubercle bacilli.

Omitting Rabbit 43 0 whose marrow specimens were lost, we have here 11 rabbits. In 6 tuberculosis was demonstrated, in 5 it was not. The 5 in which it was absent were killed respectively the day of operation, and one, two, seven, and fifteen days after operation. All animals killed after a greater interval than fifteen days, and one after an interval of twelve days showed distinct marrow tuberculosis. In other words, in every animal allowed to live over one week, save one, tuberculosis was demonstrated.

Tubercle bacilli were recovered from both tibias of Rabbit 42 0 (forty days), from the right tibia of Rabbit 47 (thirty days), and from the only operated tibia in Rabbit 78 (twelve days).

Others have noted the difficulty of recovering bovine tubercle bacilli from the marrow. In two tibias of our series they could be found only by diligent search. Typical giant cells are rare. Friedrich[2] made this observation.

The "fibromyxomatous" marrow described by Fraser is a practically constant phenomenon in the neighborhood of the tuberculous marrow, but is not peculiar to tuberculosis. It is probably present in most slow marrow inflammations, and we regard it as Nature's protective reaction against the spread of infection, not as a mysterious change which the marrow undergoes before it can be invaded, and when tuberculosis is in the neighborhood.

Another very suggestive fact that we (Dr. Cowan and I) have observed in another series of experiments (not tuberculosis experiments) on rabbits' cartilages, is the presence of a thin strip of fatty marrow which frequently is present near the circumference of the end of the femur (that is, close to the attachment of the capsule). We believe this band of yellow marrow is responsible for Fraser's contention that the lymphoid marrow of the bone end must change to fatty marrow before it can be invaded by tuberculosis from the synovial membrane.

Conclusion: The lymphoid marrow of rabbits' bones is a good field for the growth of bovine tubercle bacilli.

EXPERIMENTS ON GUINEA-PIGS

Six guinea-pigs were employed, and were killed or died, respectively, four, six, six, nine, ten and fifteen days after operation. All showed tuberculosis of the marrow, and in all tubercle bacilli were demonstrated.

Conclusion: The lymphoid marrow of guinea-pigs' bones is a good field for the growth of human tubercle bacilli.

It is now five years since the theory was first published that the location of tuberculosis in bone was determined by the presence of red or lymphoid marrow. I should like at this time to sum up the evidence to date:

1. Tuberculosis is found only in those bones or regions of bone where lymphoid marrow is present.

2. Marrow tuberculosis is more common in children, whose bones contain more red marrow. As age advances, marrow tuberculosis becomes rarer and less destructive.

3. After resections in adults, if secondary infection be avoided, the disease disappears. The best authority available says that after resections the lymphoid marrow disappears.

4. Experiments show that lymphoid marrow is an excellent field for the growth of tuberculosis.

Two links are missing in the chain of evidence; that is, the demonstration of the particular cells in the lymphoid marrow which are responsible for the disease there, and the proof that tubercle bacilli will not grow in yellow or fatty marrow. It will be instructive also to learn the exact morphologic changes which take place in the marrow after a resection.

Lane Hospital.

ABSTRACT OF DISCUSSION

DR. JOHN F. COWAN, San Francisco: What Dr. Ely has said on the question of marrow tuberculosis is exceedingly interesting, in view of the paper which was presented to this section at its meeting in Atlantic City last year by Mr. John Fraser of Edinburgh. It is said that it is very difficult, and in many cases, impossible to infect healthy marrow with tubercle bacilli; that in order for the marrow to become a fertile field for the growth and development of tubercle bacilli, it is necessary for it to undergo certain changes, which he describes as a colloid degeneration, or a fibromyxomatous change; that these changes in the marrow are due to an obliterating endarteritis, resulting from a tuberculous toxemia arising from a tuberculous process in some other portion of the body. Now we do not find

2. Friedrich: Deutsch. Ztschr. f. Chir., 1899, liii, 532.

in uncomplicated cases of tuberculosis much toxemia. Tuberculous toxins cause lesions locally; that is, in their immediate presence; not at a distance by diffusion of the toxins. At least, the kidneys never show any effect which could be ascribed to the elimination of a tuberculous toxin through them. In these experimental animals we do not find evidence of tuberculosis in other parts of the body. Postmortem examination shows tuberculosis of the marrow, but no tuberculous lesions in the lungs, lymph nodes, etc., so that it is difficult to ascribe the local vascular changes to a general toxemia. Arterial degeneration is not found as a frequent condition in tuberculosis. In fact, in advanced cases of tuberculosis, instead of finding arteriosclerosis, there is an atrophy of the vessels, as there is an atrophy of the other tissues of the body. However, there are changes in the vessels in the immediate vicinity of the tuberculous process, but these are not due to a general toxemia, but rather to the local chronic inflammation. In tuberculosis we do not find necrosis as an early factor. One may see endothelial leukocytes filled with tubercle bacilli and yet one may not find any degenerative changes in these cells. I have had the privilege of examining Dr. Ely's specimens. In some of them characteristic tubercles are seen, but with slight or no evidence of changes in the blood vessels; and this absence of an obliterating endarteritis is probably due to the fact that these animals were killed at short periods after inoculation. It seems highly probable that the bone marrow of the experimental animals may be primarily infected by tubercle bacilli.

REVIEW OF RECENT STUDIES IN TRICHINIASIS

W. W. HERRICK, M.D.
NEW YORK

Trichiniasis is not a mere medical curiosity; it is a common and important disease and one all too seldom recognized. A disease having an average mortality about half that of typhoid fever, and in some epidemics a mortality rising to 16 or even 30 per cent., as in the Hedersleben epidemic[1] in 1865, is serious. Proof that it is a common disease may be had from studies such as that of Williams,[2] who in 105 unselected necropsies in the state of New York found trichinella embryos in 5.4 per cent. In other civilized communities, this parasite is found in from 0.5 to 2 per cent. of necropsy subjects. About 6 per cent. of American swine, and a larger percentage of American rats are infected.

Recent years have added much to our knowledge of trichiniasis. The life history of the parasite and its methods of migration and distribution in the body of its host have been quite conclusively worked out. The symptoms have been adequately described and new methods of diagnosis brought into use. It remains to study more extensively certain symptoms of the disease, with a view to a more complete understanding of some as yet unsolved problems.

One of these symptoms is fever. It is interesting that the *Trichinella spiralis* is the only metazoic parasite that, infesting man, causes fever with constancy. Filariasis, hydatid disease, bilharziasis may give rise to fever, but exceptionally. In trichiniasis alone, of the parasitic disease of this class, is fever almost always present. Such fever may be due to secondary bacterial infection, to the toxic products elaborated by the trichinella, or may be a true protein fever from the parenteral introduction of alien material, either in the form of the embryo of the trichinella itself, or a devitalized body protein formed as a result of the activities of the parasite.

Evidence in favor of the first hypothesis is contradictory. The female trichinella within a week of infection burrows beneath the submucosa of the duodenum, often destroying two or three villi, and deposits embryos in the lymph spaces of the submucosa, thus giving opportunity for micro-organisms to gain entrance to the lymph channels and blood stream (Frothingham[3]). In this way a bacteremia may arise. Bacteremia in trichiniasis in man is rare. Staübli[4] mentions a severe case in which there was very high fever, and in which streptococci in pure culture were found in the blood and urine. In the second case, deep intramuscular abscesses containing numberless staphylococci were found. Friedreich[5] mentions the frequency of furunculosis as a complication of trichiniasis. In one of his cases the embryo was found in the midst of one of the furuncles along with staphylococci.

That meat containing bacteria and trichinella can give rise to a double infection seems fairly well established by a report of Chiari and Zorkendorfer[6] of an epidemic in which sixty-eight persons were made ill by eating sausage. Twenty-one of these patients showed severe symptoms with notable enlargement of the spleen. Four of the patients died and came to necropsy. The muscles of all these showed trichinella embryos, and the spleen and blood, anthrax bacilli. The *mettwurst* causing this epidemic was made from pork and a variety of other meat some of which was, in this instance, thought to be from an animal infected with anthrax. Staübli[4] examined the peritoneal exudate and blood from the hearts of two guinea-pigs dying from trichiniasis, and in one found a diplococcus, in the second, streptococcus in both regions. Romanovitch[7] could find no bacteria in infected tissue on section. However, on examination of the blood of thirty-six trichinous rats, twenty-six showed bacteremia. Of fourteen such guinea-pigs eleven showed bacteremia. The bacteria were of various kinds, streptococci, staphylococci, etc. Gruber[8] made cultures from the heart blood of fifteen guinea-pigs infected with the trichinella; only three were positive. These were in such small numbers that Gruber thought them probably contamination.

In the search for clinical data on the question of bacteremia in trichiniasis I have reviewed the cases in the Roosevelt and St. Luke's Hospitals of New York observed during the past five years, and have found that of ten cases with blood culture in none were bacteria demonstrated.

The weight of evidence is against the bacterial origin of the fever of trichiniasis. Additional argument is the conclusion of McNeal and Chace,[9] who found that in the normal duodenum bacteria are few.

1. Cited by Staübli: Trichinosis, Wiesbaden, 1909, p. 16.
2. Williams: The Frequency of Trichiniasis in the United States, Jour. Med. Research, 1901, vi, 64.
3. Frothingham, C. Jr.: A Contribution to the Knowledge of the Lesions Caused by Trichinella Spiralis in Man, Jour. Med. Research, 1906, x, 483; The Intestinal Lesions Caused by Trichinella Spiralis in Rats, Arch. Int. Med., January, 1909, p. 505.
4. Staubli: Trichinosis, Wiesbaden, 1909, p. 141.
5. Freidreich: Beobachtungen über Trichinosis, Deutsch. Arch. f. klin. Med., ix, 459.
6. Chiari and Zorkendorfer: Ueber die Aetiologie einer Massenerkrankung in Teplitz Schönau nach dem Genusses von Fleisch und Wurstwaren (Trichinose und Milzbrand), Ztschr. f. Heilk., 1894, xv, 435.
7. Romanovitch: Recherches sur la trichinose, Ann. de l'Inst. Pasteur, 1912, xxvi, 351.
8. Gruber: Neue Studien über die Pathologie der Trichinose, München. med. Wchnschr., 1914, lxi, 645.
9. McNeal, Ward J., and Chace, Arthur F.: A Contribution to the Bacteriology of the Duodenum, Arch. Int. Med., August, 1913, p. 178.

It seems more probable that the fever of trichiniasis is a true protein fever in the sense of Vaughn;[10] that it is due to the parenteral introduction of alien protein material. It has been estimated[11] that in a severe case of trichiniasis as many as 50,000,000 embryos escape into the circulation during the acute stages of the disease. Virchow[12] and later, Leuckart,[13] found numbers of embryos in the serous cavities. It is believed many perish here and doubtless in other tissue spaces. This process insures the absorption of no small amount of foreign protein. The matter, however, does not rest here. The question is carried much further by the work of Flury,[14] and of Flury and Groll.[15]

These observers, in a study of the chemistry and toxicology of the disease, brought out several important points. They found trichiniasis in animals accompanied by definite changes in muscle metabolism. While the embryos became rich in glycogen during their intramuscular development, the invaded muscles became relatively or absolutely glycogen-free. Liver glycogen was also reduced. The muscles contained increased amounts of water, also of creatin and purins in general, ammonia, lactic acid and volatile acids, while the total acidity was heightened. Corresponding with these alterations in the chemistry of muscle tissue the urine during the first five to seven days of the infection gave indication of a retention of the nitrogenous products of muscle catabolism which was followed after five or seven days by an abnormally high excretion of creatin, purin bases, lactic acid, ammonia, indican, and fatty acids. The strongly positive diazo reaction is doubtless related to this factor. Flury found also a poison in the invaded muscle resembling curare in its effect on the neuromuscular mechanism of the frog, an observation of clinical interest as partly explaining the extreme muscular weakness of the disease. This poison belongs to the caffein group of purin bases, and bodies of allied chemical and pharmocologic properties. The blood showed hydremia, a lower specific gravity of the serum, increased fragility of the erythrocytes, high content of nucleoprotein and strong albumose reaction.

Flury and Groll attribute the symptoms of the disease to poisons that are both exogenous—developed from the trichinellae themselves, and endogenous—formed by the destruction of muscle tissue. These consist chiefly of purin bases, adenin, guanin, hypoxanthin, xanthin, and other split products of muscle protein which act on the muscles themselves, on the nervous system and the blood vessels. The extravasations of blood in the lungs, connective tissue, meninges and other tissues are, in Flury's opinion, brought about by capillary poisons elaborated in the trichinous muscle probably by the trichinellae themselves. There is, therefore, both a quantitative and qualitative alteration in muscle catabolism with production of protein split products apparently peculiarly toxic.

Devitalization of such large amounts of muscle tissue by the activity of the trichinella gives rise to proteins which have an action similar to alien proteins, since *körpereigend* protein devitalized becomes physiologically *körperfremd*.

It seems quite clear that with the invasion of the blood stream and tissue spaces by millions of embryos and with the breaking down of large amounts of muscle tissue we have in effect, the constant inoculation of the patient with alien protein material, a condition which, as is well known, gives rise to fever.

The most striking and constant symptom of trichiniasis is the increase in eosinophils in the blood. This is not a relative increase alone; it is also absolute. A high total leukocyte count is quite as constant as the high eosinophil percentage. This eosinophilia arises during the migration of the embryos, from five to seven days after infection, and may persist years after the symptoms have subsided, or may disappear within a few weeks. As an instance of the persistence of this feature, I mention a case under my own observation. The patient, a woman of 24, ate *lachschinken*, Christmas day, 1911. She became ill Jan. 1, 1912, and was confined in bed for seven weeks with very severe trichiniasis, complicated by femoral phlebitis. In December, 1914, almost three years after the onset of the illness, the leukocytes were 9,000, the eosinophils 9 per cent.

From complete obscurity the question of the cause of this cellular reaction has become at least partially clear. That the eosinophilia of the helminthides is a reaction to the invasion of the body by alien protein is a fact apparently well established by the work of a number of observers. Ahl and Schittenhelm,[16] Schittenhelm, Weichardt and Grisshammer,[17] Schlecht,[18] Schlecht and Schwenker[19] have by a variety of experiments shown conclusively that the parenteral introduction of alien protein and of many of its split products into guinea-pigs, dogs and rabbits is followed by notable eosinophilia. Herrick,[20] working with an extract of the *Ascaris lumbricoides*, found a similar increase of cells resulted from injection of such extract at intervals of five days or more, but that repeated injections at shorter intervals did not bring about such a result. It was found, further, that the substance in the extract of the ascaris giving rise to the cellular reaction was a protein. By this observation the eosinophilia of ascaris infestation and therefore presumably of other helminthides may be linked with the work of the German observers cited above. The mechanism of this reaction is obscure. The interpretation most in accord with experimental and clinical facts seems to be that proteins of *körperfremd* nature or their split products bring about the formation of proteolytic enzymes which have a chemotactic influence on the eosinophils as shown by local or general eosinophilia. This theory has been expressed by a number of workers—most recently by Schwartz[21] whose monograph with its 2,758 references is a remarkably complete catalogue of facts about the eosinophils.

10. Vaughn: Protein Split Products, Philadelphia, Lea and Febiger, 1913, p. 373.
11. Heubner: Beobachtungen über Trichinosis, Jahrb., Jena, 1911, xxv, 569.
12. Virchow: Ueber Trichina spiralis, Virchows Arch. f. path. Anat., 1860, xviii, 535.
13. Leuckart: Die menschlichen Parasiten, Leipzig, 1876.
14. Flury: Trichinosis, Deutsch. med. Wchnschr., 1913, xxxix, 1388. Beiträge zur Chemie und Toxikologie der Trichinen, Arch. f. exper. Path. u. Pharmakol., 1913, lxxiii, 164.
15. Flury and Groll: Stoffwechseluntersuchungen an trichinosen Tieren, Arch. f. exper. Path. u. Pharmakol., 1913, lxxxiii, 214.
16. Ahl and Schittenhelm: Ueber experimentelle Eosinophilie nach parenteraler Zufuhr verschiedener Eiweisstoffe, Ztschr. f. d. ges. exper. Med., 1913, i, 3.
17. Schittenhelm, Weichardt and Grisshammer: Eiweissumsatz und Ueberempfindlichkeit, Ztschr. f. exper. Path. u. Therap., 1912, x, 412.
18. Schlecht: Ueber experimentelle Eosinophilie nach parenteraler Zufuhr artfremden Eiweisses und über Beziehungen der Eosinophilie zur Anaphylaxie, Arch. f. exp. Path., 1912, lxvii, 137.
19. Schlecht and Schwenker: Ueber die Beziehungen der Eosinophilie zur Anaphylaxie, Deutsch. Arch. f. klin. Med., 1912, cviii, 405.
20. Herrick, W. W.: Experimental Eosinophilia with an Extract of an Animal Parasite, Arch. Int. Med., February, 1913, p. 165.
21. Schwartz: Die Lehre von der allgemeinen und artlichen Eosinophile, Ergebn. d. allgemein. Path., 1914, xvii, 136.

A further point of interest in the development of knowledge of this disease is the observation of Van Cott and Lintz,[22] who for the first time described the finding of trichinella embryos in the spinal fluid. The embryos, obtained by ordinary lumbar puncture, were present in large numbers, and retained motility after five days in the ice chest. Thus far this finding has not been confirmed by further similar reports. In performing such puncture the greatest caution should be taken against introduction of trichinella embryos into the needle from tissue surrounding the spinal canal, or from punctured blood vessels. If the embryo can penetrate the sarcolemma of the primitive muscle fiber, it is not at all improbable that it can traverse the two layers of endothelium separating the blood stream of the choroid plexus from the cerebrospinal spaces.

For the future study of trichiniasis the points of greatest interest beyond the seemingly hopeless problem of therapy are the relation of bacteremia and the question of the presence of embryos in the spinal fluid. Blood cultures and lumbar puncture with examination for embryos are suggested as routine procedures in the clinical study of this disease.

49 East Fifty-Third Street.

REPORT OF CASES POINTING TO PURULENT INFECTION AS A CAUSATIVE FACTOR IN MUCOUS COLITIS

J. W. PRESTON, M.D.
ROANOKE, VA.

In view of the multiplicity of causes to which mucous colitis is ascribed, and the lack of proof adduced in substantiating any of them, it may be questioned whether the chaotic mass of literature should be added to. Since, however, it is a condition so intimately associated with the abnormal functioning of the autonomic nervous system, of which so little is known, and which from its very nature must be investigated largely from a clinical standpoint, I have thought it worth while to report the following cases, which seem to have a direct bearing:

REPORT OF CASES

Case 1.—Mrs. A. S. C., aged 50, came under observation complaining of general debility, tenderness over the abdomen, bloating, palpitation, persistent constipation, with the passage of scybala and characteristic mucus, all together presenting a definite picture of mucous colitis. In addition she suffered from a pain of a neuralgic character through the distribution of the cervical nerves, and in the left frontal region. Her history was unimportant, except a nervous breakdown at the age of 30, and severe neuralgic pains of the face and neck four years prior to being seen, which subsided until November, 1914, when they recurred, together with the foregoing symptoms, and had continued in varying degrees since. Nothing could be elicited pointing to inflammation of any of the sinuses other than the pain complained of, she having no recollection of any discharge of pus or blood from the nose. Having in mind a paper by Dr. Starr,[1] in which he details his observations to the effect that many cases of neuralgia, neurasthenia and allied nervous diseases are due to the absorption of poisons from the intestinal tract, the head pains were at first supposed to result from this source, and she was temporarily put on a treatment of laxatives and intestinal antiseptics, with no beneficial results. In a search for a more direct cause of the neuritis, following the negative report of a competent dentist as to the source of infection existing among her teeth, she was referred to an oculist, who reported the occlusion of the left frontal sinus, as shown by transillumination. He removed the left middle turbinate and released a quantity of foul-smelling pus, which not only resulted in the almost immediate improvement of the neuritis, which would of course have been expected, but also of the abdominal symptoms, as evidenced not only by the prompt diminution of the palpitation, bloating and mucus, but also the constipation. She reported six weeks later that while there was still some discharge from the head, the bowel symptoms were practically cured, there was no mucus, and what was more surprising, that she had not found it necessary to take medicines for constipation for the past month.

Case 2.—J. L. B., aged 40, foreman in a bridge works, requested treatment in April, 1915, on account of digestive disturbances and headaches. He stated that two years previously, he had nasal polypi removed, and his health had since been good until October, 1914, when he first noticed mucus in his bowel movements, and about the same time began to suffer from bloating of the abdomen, and headaches. These symptoms gradually grew worse; he became constipated, and unless he took laxatives regularly, his feces, which had previously been normal, were dry and lumpy, and always contained mucus. His appetite was poor, and his food disagreed; he became nervous and irritable, and was unable to take an interest in his work. He developed soreness and pain over his abdomen, and on account of bloating was compelled, much of the time, to wear his clothes unfastened. These symptoms continued in varying degrees over a period of about three months, when the severe headaches, together with the findings as previously detailed, focused attention on his sinuses, and on referring him to a nose and throat man, it was found that there was a necrotic condition at the point from which the polypi had been removed, and further search disclosed inflammation of the ethmoid. This was drained, and while the operation was complicated by a severe secondary hemorrhage, and healing was slow, without further medication all of the symptoms have gradually cleared up. His digestive and nervous symptoms have disappeared, and he has not for some time required medicine for the relief of constipation. He again takes a lively interest in his work and plans.

Case 3.—A. C. T., aged 33, traveling salesman, was first seen Jan. 13, 1914. He gave a history of fair general health, previous to four months before, when he began to suffer with vague pains throughout the abdomen, sleeplessness, a tendency to looseness of the bowels, alternating with constipation, and the passing of tenacious mucus, which was worse on dieting, soreness in the right iliac region, and over the splenic and hepatic flexures of the colon. He had drifted from one physician to another, and a difference of opinion had existed among those consulted as to the advisability of an operation for appendicitis. No organic disease could be made out, but it was noted that his teeth had been badly neglected, and that some of them showed abscesses. As there was but little benefit from a month's treatment of the colitis, he was prevailed on to have the offending teeth extracted, which he had done in March. He reported at the end of the second month that all of his symptoms were markedly improved, in spite of the fact that he had for a time experienced difficulty in masticating his food on account of soreness of the gums. Later inquiry elicited the fact that his bowel movements were regular, without medicine, no bloating, discomfort, or mucus, his sleep good, and his general health normal.

Craig[2] reports a case of arrhythmia associated with angina, cured by draining abscesses of the teeth, and also in the same article one of dizziness, cardiac symp-

22. Van Cott, J. M., and Lintz, William: Trichinosis, The Journal A. M. A., Feb. 28, 1914, p. 680.

1. Starr: The Toxic Origin of Neurasthenia and Melancholia, Med. Rec., New York, May 11, 1910.

2. Craig, C. Burns: Peridental Infection as a Causative Factor in Nervous Diseases, The Journal A. M. A., Dec. 5, 1914, p. 2027.

toms, mental depression, and incidentally "slight evidence of catarrhal colitis," all of which cleared up promptly on the removal of a bridge and drainage of abscesses.

Since the causative relation of an infection to the syndrome of mucous colitis has suggested itself to me, I have been interested in reviewing my notes of cases treated previously to find that among them were two of fistula in ano, one of a purulent infection of the fallopian tubes, and one of a severe pyorrhea. Surgical and dental treatment was suggested in each of these, but not insisted on, as would have been done had it then occurred to me that the foci might be of etiologic importance. Each passed from observation but slightly improved. These cases, of course, prove nothing, but I believe are worthy of mention.

Rather than speculate as to what products may be absorbed from a purulent focus, or how they may throw the autonomic nervous system out of balance, one may with propriety call attention to some similar well-known, but little understood, conditions, notably the urticaria, with its complex of symptoms, observed in susceptible individuals on eating shellfish; the symptoms of anaphylaxis resulting in others from the ingestion of the albumin of an egg; the systemic effect of the presence of certain pollens in the hay-fever subject, and finally the effect of the subcutaneous introduction of even a minute quantity of a protein into the circulation.

Bearing in mind the intimate relation and influence of the secretions of the adrenal, thyroid, and pituitary glands on the functioning of the system under consideration, the findings of Rosenow[3] tending to show that goiter, particularly exophthalmic, with its kindred symptoms, is due to a direct infection, are worthy of note in this connection; but after all a sensitization resulting from the more or less constant absorption of toxins or other products would seem more probable.

215 South Jefferson Street.

THE EFFECT OF TYPHOID VACCINATION ON THE WIDAL REACTION

C. D. HAMILTON, M.D.
SYKESVILLE, MD.

In 1896 Widal and Grünbaum, each working independently of the other, applied the principle of agglutination, as previously recognized by Gruber and Bordet, to the diagnosis of typhoid fever. Since then the Widal reaction, when present, has been considered by most clinicians as the last word in the diagnosis of this disease.

In 1908, however, when Major Frederick F. Russell first began using antityphoid vaccine in the United States Army, and the practitioners over this country gradually followed his lead, a new phase in the diagnosis of typhoid occurred. It was soon recognized by observers that a positive Widal reaction always followed a prophylactic dose of typhoid vaccine. The vaccine, however, had not been in use a sufficient time to ascertain the length of time this reaction persisted. While we now believe the presence of a positive Widal reaction is not necessary for immunity, but that the patient may still be immune after the reaction has ceased to exist, it is not our purpose to discuss this phase of the question here. However, the presence of the reaction is of the greatest importance if typhoid fever is suspected.

Since 1910, at the Springfield State Hospital, there have been 2,766 prophylactic doses of typhoid vaccine given and at intervals specimens of blood have been taken to ascertain the presence or absence of the Widal reaction. During the first eighteen months after the typhoid vaccination was adopted at this hospital each patient received three doses of the vaccine at intervals of one week. The first dose consisted of 125 million killed bacteria, in salt solution. The second dose consisted of 250 million and the third dose consisted of 500 million killed bacteria. At the end of eighteen months we adopted the dosage which we now use; namely, 250 million, 500 million and one billion killed bacteria, given at intervals of one week. The patients, however, who received the original smaller doses were not reinoculated, but their blood was examined with the rest. All of the specimens of forty-eight and fifty months belong to patients who received this smaller dose of the vaccine.

In making the Widal test we use an old strain of bacteria which are known to be easily agglutinable. These are transferred from the agar slants to bouillon and are used when from eighteen to twenty-four hours old. The blood of the patient is collected in capillary beads, allowed to stand for a few hours until the serum separates. This serum is then diluted 1:25 and an equal portion of it and the bouillon culture are mixed, thus making a dilution of 1:50. A hanging drop is then made in the usual manner and allowed to stand one hour, when it is examined and the result read. A control in which salt solution instead of serum is used is similarly prepared to guard against artificial clumping. Only the blood of patients who could give a clear history of never having had typhoid fever was examined. Blood was taken from patients at the end of one month, six months, twelve months, twenty-four months, thirty-six months and forty-eight months, respectively, with the following results:

One month: Ten specimens of blood all gave positive Widal reactions.

Six months: Ten specimens of blood all gave positive Widal reactions.

Twelve months: Ten specimens of blood all gave positive Widal reactions.

Twenty-four months: Ten specimens of blood gave seven positive and three negative Widal reactions.

Thirty-six months: Ten specimens of blood gave six positive and four negative Widal reactions.

Forty-eight months: Ten specimens of blood gave three positive and seven negative Widal reactions.

One patient inoculated fifty months ago still had a positive Widal reaction.

From the foregoing we would emphasize the fact, as already stated by Hirschbruch,[1] that a positive Widal reaction in any person who has ever been inoculated with the antityphoid vaccine is of no value in diagnosing typhoid fever. The only reliable way of ascertaining the cause of continued fever when typhoid is suspected is by the blood culture and a total and differential leukocyte count.

Springfield State Hospital.

3. Rosenow, E. C.: The Newer Bacteriology of Various Infections as Determined by Special Methods, THE JOURNAL A. M. A., Sept. 12, 1914, p. 906.

1. Hirschbruch, A.: Agglutination After Vaccination Against Typhoid, Deutsch. med. Wchnschr., April 29, 1915.

RADIUM IN THE TREATMENT OF CARCINOMAS OF THE CERVIX UTERI AND VAGINA*

HOWARD A. KELLY, M.D.
AND
CURTIS F. BURNAM, M.D.
BALTIMORE

The scope of this paper has been intentionally limited to a consideration of the value of radium in treating the malignant epithelial new growths of the vagina and cervix uteri. Equally interesting technical problems and clinical phenomena are met when radium is used in treating other kinds of malignant tumors, for example, the sarcomas and carcinomas, and tumors in other organs, as the bladder, breast, tongue, etc. The technic, the indications for treatment and results obtained vary with the type of tumor and its location so greatly that each demands separate consideration. It is especially difficult to have to exclude the adenocarcinoma of the fundus uteri, as it is quite radiosensitive and as we have of it the most excellent material, both clinical and anatomic. The problems connected with its surgical as well as radium treatment, however, differ widely from those of the cervical—uterine and vaginal — cancers.

Absolute valuation of a therapeutic agent is obtainable only after all methods of using it have been tried out on carefully selected and classified cases over a period of years. Our knowledge of the curative action of radium on cancers of the uterine cervix and vagina is as yet in its infancy; nevertheless, its ultimate possibilities, viewed in the light of present experience, seem very great. That it does greatly increase the percentage of the curable cases of these cancers and correspondingly diminishes the percentage of the incurable is already evident and demonstrable.

So far as is known, untreated cancers of the cervix uteri and vagina do not heal spontaneously and do inevitably lead to painful death after a period of suffering varying from a few months to several years.

The continuous and painstaking work and investigations of many surgeons and pathologists through a period of more than two decades have firmly established the accepted surgical technics with their proved five year cures. During this time there has been accumulated an immense store of information regarding the occurrence, the etiologic importance of trauma, the histopathology, the avenues of extension, the rate of growth and the complications of these malignant, epithelial new growths.

The Wertheim radical hysterectomy, in our opinion, yields a higher percentage of permanent cure in cancer of the uterine cervix than does any other operative procedure. It affords, however, much less help in the treatment of primary cancer of the vagina.

Nothing is more misleading than a gross statistical statement of so many patients operated on, such a primary mortality and so many permanent cures. The operator who takes only the early and moderately advanced cases has a lower primary mortality and a higher permanent cure rate than does the one who treats many of the border-line operable type. Where a professional and public educational campaign against the disease has been carried out, as in Vienna, the proportion of easily operable cases is much larger than where such advanced methods have not been followed. Great need exists for reports on carefully classified groups of cases, and not only the extent of the growth but also its histologic type should be taken into account in the group separations.

A statistical report by Howard A. Kelly and J. Craig Neel of the cases of uterine cervix cancer seen at the Johns Hopkins Hospital up to August, 1913, shows 57 per cent. operable, 11 per cent. primary mortality and 25 per cent. permanent cure. It is of interest that only one case of adenocarcinoma remained free from recurrence for two years after the operation. Wertheim[1] states that 50 per cent. of his cases are operable, and that 50 per cent. of those patients operated on remain well. Krönig[2] states that not more than 20 per cent. of the cervix cancers are permanently cured by operation and less than 5 per cent. of the primary vaginal cancers.

The present report is based on a series of 213 cases of cancer of the uterine cervix and vagina treated with radium at the Howard A. Kelly Hospital, between Jan. 1, 1909, and Jan. 1, 1915. Although one of the cures dates from 1909, it was not until December, 1912, that we secured sufficient radium and developed sufficient enthusiasm to employ it systematically, and indeed only in the last eighteen months have the patients in the operable class been invariably radiated as well as operated on. Of the 213 cases, fourteen were operable and 199 inoperable or inoperable recurrent cancers. We have refused treatment to no inoperable case that has come to the hospital, although we have discouraged the coming of patients with evident general carcinomatosis. Before passing to a detailed analysis of these cases and the results obtained by treatment, it seems necessary to discuss very briefly some questions of technic, of histologic change (in radiated tissue) and of theory as to the mechanism of the action of the rays on tissues both normal and pathologic.

It would be most profitable here to digress into a most fascinating field of human knowledge, but time does not permit even a bare outlining of the physical properties of radium. Suffice it to say that radium is obtainable in stable form as a bromid, chlorid or sulphate, and that by appropriate means radium emanation, a gas, can be separated from the radium salts.

In order to carry out such a radium radiation, as the cases under consideration require, it is necessary to have applicators which hold either dry radium salts or the emanation of radium. The emanation has a great advantage in that it is possible to vary the size, shape and strength of the applicator at will and for each case; it requires, however, considerable skill in glass blowing and in mercury vacuum-pump manipulation.

Figure 1 shows a few applicators; the millimeter rule permits an easy estimation of size. The small tube between the needles is a glass capillary in which any amount of emanation between a fraction of a millicurie and a curie (equal to a gram of radium) can be placed. This can be inclosed in a metal container of its own shape and length, or it may be placed in the outer end of one of the record syringe hypodermic needles, shown on either side of it. Immediately to the right of the needle is an applicator containing 100 mg. of pure radium chlorid in a glass tube encased

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Wertheim: Strahlentherap., iii, 537.
2. Krönig: Strahlentherap., iii, 28.

in a thin platinum envelope 0.4 mm. thick, and all covered by a small rubber cot about 3 mm. thick. Still further to the right is shown the platinum envelope necessary to hold 100 mg. of pure radium chlorid. The last figure to the right shows a small flat applicator. These can readily be made an inch or two in diameter, and will hold immense or small amounts of emanation as desired. Through the glass container are emitted from the radium two kinds of rays: the beta and the gamma.

The beta ray is particulate matter, a negatively charged ion, deflectable by an electromagnet, entirely absorbed by 3 mm. of lead, or 2 cm. of tissue. Occurring in ten times the quantity of the gamma rays, it produces much more marked destructive biologic effects.

The gamma ray is a vibration of ether of extremely short wave length. It is comparable to ordinary light and the Roentgen ray. It is extremely penetrating, passing through inches of lead or feet of tissue.

When tested by the heavy metals, such as lead, platinum, etc., both the beta and the gamma rays vary as to penetration. There are soft, medium and hard rays of each class; however, according to Keetman and Mayer, the absorption of these rays in tissue is as if they were uniform, that is, for a given thickness of tissue there is an equal percentage of absorption of

Thickness of Tissue Traversed, cm.	Absorption of Tissue, per Cent.	Radiation Transmitted, per Cent.	Dispersion Correction	Intensity of Radiation per sq. mm.	Amount of Radium Unit to Give One mg.
0	0	100	0	1	2,500
1	5	95	0.695	0.66	3,788
2	9.75	90.25	0.51	0.464	5,410
3	14.3	85.7	0.39	0.335	7,465
4	18.6	81.4	0.31	0.251	9,950
5	22.17	77.83	0.25	0.194	12,880
6	26.06	73.94	0.207	0.153	16,310
7	29.76	70.24	0.174	0.122	20,480
8	33.3	66.7	0.147	0.098	25,500
9	36.7	63.3	0.128	0.081	30,870
10	40	60	0.11	0.066	37,500

the rays going through it. The work of Keetman and Mayer carried out with mesothorium is being repeated with radium in our physical laboratory, but is not yet finished. According to them, 8 per cent. of the beta rays are absorbed by each one-tenth millimeter of tissue and 5 per cent. of the gamma rays by each centimeter of tissue. Beta and gamma rays can be used together or the gamma ray can be used alone by placing a 2 cm. lead screen or a 1 mm. platinum screen between the radium and the part treated.

In addition to absorption in tissue, another most important factor in determining the intensity of radiation, on any surface, from a uniform source, is the distance from the source; for the intensity as in all spherical dispersion varies inversely with the square of the distance. If, for example, we place 1 mg. of radium 1 mm. distant from a 1 mm. square surface and then extend the distance to an inch or 25 mm., the intensity at 1 mm. distance is 625 times that at the distance of 1 inch, as can be readily calculated.

Taking the 1 mg. at 1 mm. in one second on 1 square mm. of surface, as the unit of dosage, and taking in the factors of spherical dispersion and tissue absorption, the table inserted above shows the effects at various depths and the quantity of radium which is necessary to produce a unit dose in one second when the applicator is placed 5 cm. away from the surface.

A factor not considered in the table but of the highest importance, is that, within certain limits, increasing the duration of the application correspondingly diminishes the amount of radium required to produce the unit energy: for example, a unit dose at a depth of 5 cm. can be secured with 1 gm. radium in 12.88 seconds, or with 200 mg. of radium in a little more than a minute.

Figure 2 shows graphically the changes in intensity of gamma radiation at different depths in the tissue.

It is evident that when beta radiation is needed in the depths, it can be secured by placing the emanation-containing needles at equal distances, never greater than 1 cm. from each other, throughout the entire area to be radiated. When gamma radiation alone is used, it should be borne in mind that the greater the distance the radium is placed from the surface, the greater the relative penetration secured in the depths. The ideal radiation is a homogeneous and equal one throughout the entire affected volume.

Consideration of the above facts makes it clear why to do extensive work adequate amounts of radium are necessary, and why the statements of so many milligram hours with such and such filters mean little or nothing unless the distance worked at is clearly stated. It is also, we think, evident that each case must be individualized and appropriate radiation given. In cancers along the vaginal wall, especially on the rectal side, it is of advantage to have flat applicators and to get within a few millimeters of the vaginal surface, as in this way the infected vagina gets a maximum and the rectum a minimum radiation. In radiating the regional lymphatic glands or upper parametrium, a number of portals should be used from the abdomen, back, vagina and perineum, at distances varying from 2 to 5 inches from the surface. Figures 3 and 4 show schematically the common locations and distances of the cervical and vaginal cancers from the body surface. We propose in a separate communication to deal exhaustively with the technic of radiation and will not go into further detail here.

Excellent descriptions of the histopathologic changes found in the cancerous uterine cervix after intense radium radiation can be found in the reports of Hansemann[3] and Haendly.[4]

Beginning a week after radiation there is swelling of the cell protoplasm, hyperchromatosis and pyknosis of the nuclei. After five or six weeks, the cancer cells are entirely gone, the connective tissue and blood vessels show hyaline changes. There may be a marked infiltration with polymorphonuclear leukocytes, and often giant cells are present. At a later stage this necrotic and inflammatory tissue is replaced by ordinary connective tissue. When radium is placed directly within the cervix and left sufficiently long, changes of this type invariably occur.

We have eight uteri removed a sufficient time after radiation to study the changes in the tissues. Vestiges of cancer have been demonstrated in only three of these. All will be serially sectioned and reported on in detail in a later communication. All were from patients with cancers originally inoperable.

It should be borne in mind that the intense inflammatory changes described above follow overradiation and are due to imperfect technic. The action of the rays is not in a true sense specific; normal tissues as

3. Hansemann: Berl. klin. Wchnschr., 1914, No. 23, p. 1064.
4. Haendly: Berl. klin. Wchnschr., 1914, No. 2, p. 86.

well as pathologic are injured and can be easily destroyed. There are wide variations in the resistance to radiation in different normal tissues. The vaginal wall and cervix are very resistant, enormously more so than skin. Bumm of Berlin gave currency to a widely accepted dictum that the limit of the gamma-ray efficiency (in tissue) was 4 cm. It is probably true that it is not possible to place radium directly in the cervix and radiate sufficiently to destroy the cancer cells beyond 4 cm. without causing severe local destruction of normal tissues; but it is possible to radiate from almost any distance by proper disposal of the applicators. In one case we cleared up an extensive vaginal cancer by radiation through the vulva, the radium being placed 10 cm. from the surface of the vulva. In another patient who did not recover, but died of general cancer, we saw large metastatic deposits disappear from the iliac lymphatic glands—the patient was thin and the masses easily outlined.

Our view of the action of radium is that, to markedly varying degrees, it injures all tissues, and that the injury is some kind of intracellular chemical change. It seems to us improbable, however, that the disappearance of cancer cells without any demonstrable effect on normal cells can be due solely to a difference in resistance of the cells to radiation. The common observation that in two cases with the same type of growth, subjected to the same radiation, different results are obtained; that in one the cancer disappears promptly and in the other is not affected at all, suggests the importance of resistance in the patient. It also opens up a wide field for speculation and experimental investigation as to what this resistance may be, where it is located, how it may be artificially produced, etc.

Radiation carried to the extent of severe injury of normal tissue may defeat its own ends. We have observed in one specimen of uterine cancer and several specimens from other parts of the body a condition which needs interpretation. In the cervix cancer the facts are as follows: The patient came in with solidly fixed parametria; intense intracervical radiation was given with the result that the uterus became freely movable; after six weeks hysterectomy was performed. Microscopic study showed from within outward, (1) a zone of necrosis; (2) a zone of greatly modified connective tissue, blood vessels and altered cancer cells; (3) a zone of normal connective tissue and no cancer cells.

In every patient treated, a radiation up to but not beyond this toleration of the normal tissues should be given so as to take in all the infected area, including the parametria and regional lymphatic territory. This radiation should be made as homogeneous as possible, bearing in mind the underlying physical principles already mentioned.

The most easily injured normal tissue in connection with cervical and vaginal cancer radiation is the rectum. In our earlier cases, when we were less familiar with our agent and totally unacquainted with the tissue reactions, this complication was not uncommon and in some cases led to such serious results as ulceration, fistula formation and even death from infection. Such a complication manifests itself first in from ten days to two weeks after the application, by diarrhea and tenesmus. In the mild types this may disappear in two weeks and no further trouble develop. In the severer grades the proctitis lasts two months or more, then disappears to recur about the beginning of the sixth or seventh month, with ulceration in the anterior rectal wall. This condition is very painful and takes from three to five months to heal. In the worst cases actual fistula formation takes place before healing. *We are happy to state that this complication can be avoided in every case.* We have not seen it for months.

The first radiation should be given in a single dose, following which a pause of at least five or six weeks is necessary before a second treatment is given. During this time the patient should be examined once a week. Some carcinomas, especially the basal celled of the vaginal wall, begin diminishing in a few days and disappear in as short a period as two weeks after the treatment. Most of them begin the decrease at the end of two weeks and continue diminishing for five or six weeks. If at the end of six weeks the growth has disappeared, another four weeks should pass before a second treatment is given. After the second treatment practically all cases in which there will be recovery will show complete disappearance of the growth. In view of the fact that we have seen a number of recurrences developing several months after apparent complete disappearance of the growth, we believe that the radiation should be repeated every few months for a year or two. Some of our permanent successes have been, however, secured from a single radiation.

As a rule, the general symptoms which follow a radiation are mild nausea for twenty-four hours and a sense of weakness for four or five days. Sometimes there are no disagreeable symptoms at all, and in no case has there been any alarming developments. The patients are rarely kept in the hospital longer than the day of treatment.

Every patient before treatment is most thoroughly investigated both from the local and general standpoints, and invariably tissue is secured for microscopic study. The application of the radium sometimes made under nitrous oxid is more frequently made without anesthesia.

Up to the present time we have not found means of determining prior to radiation what its effect will be. The general strength of the patient is not of prime importance. We have seen local disappearances in patients in the last stages of general carcinomatosis. Nor is the extent of local involvement of importance; large growths may disappear and small ones fail to do so. The histologic type is likewise relatively unimportant in this connection; in the cured list are twenty-nine squamous-celled epitheliomas, seventeen basal-celled epitheliomas and seven adenocarcinomas. In passing, we desire to state that squamous-celled epitheliomas may long remain local, and that some basal-celled epitheliomas rapidly metastasize. Among the recurrent cases, it has been noted that those which develop late, two years or more after operation, almost always do well; the cause most likely is connected with immunity factors in the patient.

CLASSIFICATION AND DEFINITION

We have divided our cases into three groups: 1, operable; 2, inoperable; 3, recurrent inoperable. The results obtained have also been placed in three classes: 1*a*, clinically cured; 2*a*, improved; 3*a*, unimproved.

1. By operable cancers are meant those still confined to the cervix or only moderately involving the parametria and vaginal walls. They are not fixed to

the pelvic wall on either side and have not caused hydronephrosis and are not associated with pelvic pain.

2. By inoperable cancers are meant those associated with general metastasis, those firmly fixed to one or both pelvic walls; those extensively involving

Fig. 1.—Radium applicators and scale indicating size.

the bladder, vagina or rectum. In short, cases in which we have never cured the patients by operation.

3. By recurrent inoperable cancers are meant such recurrences following operation as we have never cured except by radium.

1*a*. By clinically cured is meant the complete disappearance of the cancer so far as palpation, curettage or other method may disclose associated with the apparent perfect general health of the patient.

2*a*. By improved is meant a definite betterment of the patient's condition. In the lesser degrees this may consist of a cessation of hemorrhage and discharge, or a disappearance of pain which has resisted all the drugs, including morphin. Among these, too, are placed twelve cases in which all local trouble disappeared, but the patient showed metastasis at the time of treatment or developed it subsequently. Two of these patients were found locally free of cancer at necropsy, and in two, in whom hysterectomy was carried out after apparent clinical cure, the uteri are clear of the disease, in spite of the fact that both patients are now dead from general metastasis. In most of the cases of this group the reduction in the size of the tumor was marked. It also includes some early cases in which the treatment was very imperfect.

3*a*. By unimproved is meant no material benefit having been produced. Most of these showed histologic improvement on microscopic examination of curettings. In more than two thirds of them the disease was immense and the general condition of patients bad.

All of the patients included in this report were treated prior to January, 1915, and the cured ones were apparently cured at that time. All of the cured have been investigated by one or both of us personally, with a few exceptions in which the examinations were made by competent men. The last report on each case was obtained in May, 1915.

RESULTS

The results obtained by the treatments may be summarized as follows:

Out of the 213 cases treated, 14 were operable and 199 inoperable.

Operable Cases.—Of the 14 operable cases, 10 patients were operated on and treated prophylactically with radium. Of these, 2 have been well for more than three years, 1 for more than two years, 4 for more than a year, and 3 for more than six months. The number is too small to draw conclusions from, and yet is suggestive, when we consider that in 75 per cent. of all cases with operation there is recurrence and that 60 per cent. of these recurrences take place within one year following the operation.

In four cases of the operable group, on account of some general contraindication to operation, radium alone was used. All of this group are living and well; 2 for over three years and 2 for over one year.

Inoperable Cases.—The total number of inoperable and inoperable recurrent cases is 199, of which 53 patients have been clinically cured, 109 markedly improved and 37 not improved.

Our series includes 35 cases of originally inoperable cancer of the cervix uteri or vagina in which the patients are clinically cured; in 2 cases for over four years; in 2 cases for over three years; in 4 cases for over two years; in 17 cases for over one year; in 10 cases for over six months. It also includes 18 cases

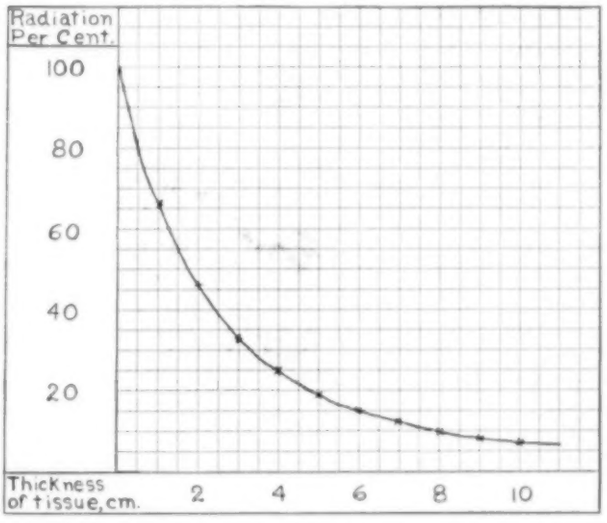

Fig. 2.—Curve showing the variation of the intensity of gamma radiation with the thickness of tissue.

of originally inoperable recurrent cancers in which the patients are now clinically cured; in 1 case for over six years; in 1 case for over four years; in 11 cases for over two years; in 10 cases for over one year; in 5 cases for over six months.

Excluding the operable cases, in which we have both operated and used radium, there are 203 cases left; in

57 of these 203 cases the patients are clinically cured. We employ the word clinically cured and will reserve the word cured for later reports, to apply to cases beyond the five-year limit, which has been conventionally adopted by surgeons as a time limit for estimating the permanency of cures of malignant disease.

Of the 57 clinical cures, 1 has lasted for six years; 3 for over four years; 4 for over three years; 5 for over two years; 29 for over one year, and 15 for over six months.

CONCLUSIONS

We are convinced that radium is of exceedingly great value in the treatment of cancers of the cervix uteri and vagina.

We expect with all confidence that the results in the next 200 cases will far surpass those reported here.

We again emphasize that the betterment in the improved but not cured cases is so marked that it alone makes radium a great addition to existing methods and would justify its use.

We believe that every inoperable cancer of the cervix uteri or vagina, provided general metastasis is not evident, stands a chance of at least 1 in 4 of cure by radium treatment.

There is a marked reason to believe not only that a large number of inoperable cases are curable, but that by the joint use of radium and operation that the 1 in 4 cure rate of operation in operable cases may be raised to 3 in 4 or better.

We have seen that some cervical cancers do not respond to radium treatment. This same variation in

Fig. 3.—Common locations and distances of the cervical and vaginal cancers from the body surface as seen from the side.

reaction occurs in many other types of neoplasm. It is apparently due to a lack in the patient of resistance to the specific growth. Work should be directed toward determining where the body products which attack a radiated cancer arise and what they are. On account of the certainty that some of the operable cancers of the cervix would not be cured by radium and also on account of the necessity of having many patients over five years cured in order to be sure of the permanency of the results, we advise, in operable cases, hysterectomy and radiation. This is the rule in clearly operable conditions. In border-line cases, we advise the use of radium, as the permanent cures from operation are not numerous in this group. If the

Fig. 4.—Common locations and distances of the cervical and vaginal cancers from the body surface as seen from the front.

growth does disappear, it can only be determined whether or not hysterectomy is advisable by trying out both methods; this as yet has not been done in a sufficient number of cases to arrive at any definite conclusions. We do feel, however, that when clinical cures have occurred in inoperable cases, operations are probably best not carried out. Manifestly an inoperable case which becomes operable but does not entirely heal should be treated by operation.

Finally we desire to restate most emphatically that radium can and should be used in these cases without any local or general injury to the patient treated.

1418 Eutaw Place.

Mental Workers and the Heart.—Mental workers do not appreciate at all that they are prone to sudden death from heart failure, particularly after the forty-fifth year of life. Illustrations of this are disclosed all around us every day. Strain and poisoning of intrinsic origin are unquestionably the factors that work with these also. There is a continual upkeep of an increased circulation to the brain, associated with what we believe to be a retarded or sluggish circulation through the eliminative organs. As is well known, this type of worker is also particularly prone to overindulgences in food and drink. There is the same inclination to seek stimulants (coffee and tea must be included here also) as we find among any class of workers who are subject to exhaustion. This particular class, because of the unusual sedentary character of the occupation followed, is least able to digest and eliminate such forms or degrees of food consumption. A peculiar thing, however, is that the appetite of the mental worker appears out of proportion to his caloric or intrinsic requirements.—E. R. Hayhurst, M.D., on Occupational Heart Disease.

THE ACTION OF RADIUM ON CANCERS OF THE PELVIC ORGANS

A CLINICAL AND HISTOLOGIC STUDY *

HENRY SCHMITZ, M.D.
CHICAGO

Since April, 1914, I have treated 112 cases of malignant growths of various regions of the body with radium. Forty-eight of these occurred in pelvic organs. Forty-one of these pelvic cancers are considered in this paper. Thirty-six were in the uterus, five in the rectum and three in the bladder. The tumors were inoperable, recurrent or operable carcinomas. Twenty-four were inoperable, nine recurrent and eight operable.

Ten of the inoperable and three of the recurrent carcinomas were thoroughly cauterized or excochleated and then cauterized preceding the application of radium. Broken-down tissue and débris were thereby as completely removed as possible, and the extent of the intensity of the gamma rays into the depths of the tissues correspondingly increased. The operable cases were subjected to an extensive vaginal cauterization and an abdominal panhysterectomy. As soon as the patient recovered from the operation, radium was inserted into the crater of the broad ligament. The rays were used as a prophylactic to recurrence.

I wish to draw attention to the remarkable deodorizing and purifying action of radium. Those who have attended patients after such abdominal panhysterectomies well remember the sloughing of tissues in the crater of the broad ligament, which gives rise to a terrific putrid odor and discharge and an irregular temperature. One, or at the most two applications of radium stop these distressing complications. The cauterizations always were performed with ordinary soldering irons at red heat.

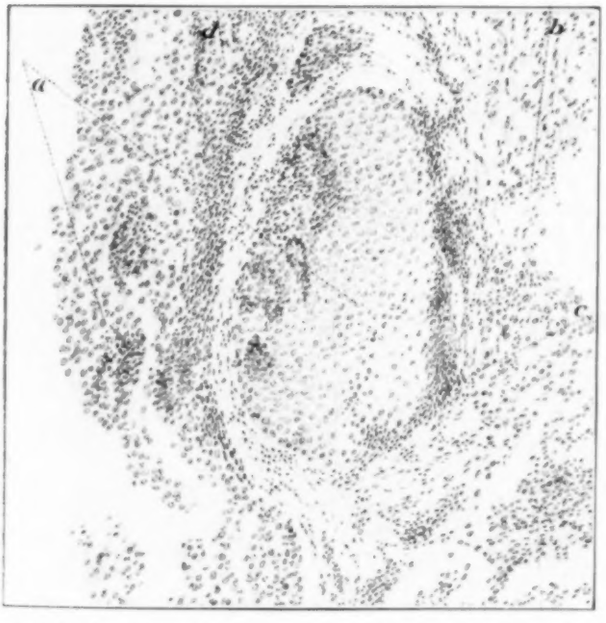

Fig. 1 (Case 33).—Carcinoma, portio vaginalis, cervix uteri. Low power repreduction of tissue removed Feb. 6, 1915, at beginning of treatment: *a*, squamous cell carcinoma; *b*, connective tissue; *c*, lymphocytic infiltration; *d*, area reproduced in Figure 2.

THE TECHNIC

The technic of applying the radium varied as to the limiting of time of the applications and the kind of metal filters used, but not in the amount of milligrams of radium element applied (uniformly 50 mg.).

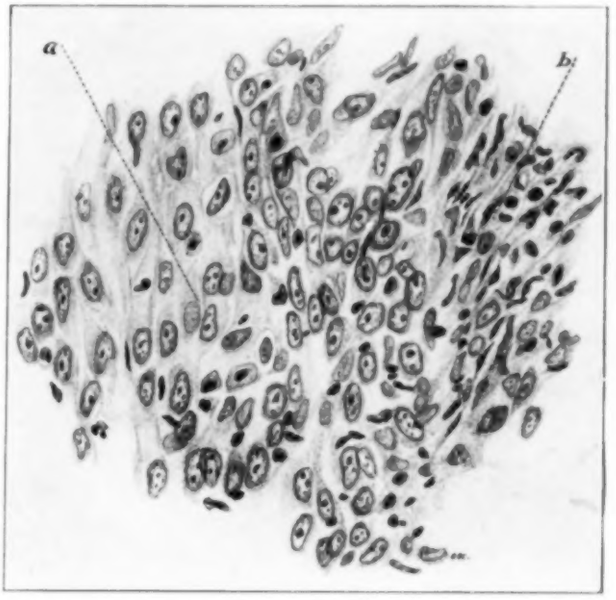

Fig. 2 (Case 33).—High power magnification of Area *d* in Figure 1: *a*, carcinoma cells; *b*, connective tissue.

In the beginning of my radium work, the duration of each application was from ten to twelve hours, occasionally twenty-four hours. The interval between the treatments varied from seventy-two to ninety-six hours. These applications were continued until a decided improvement occurred in the subjective as well as the objective condition of the patient. This usually took place after a dosage of from 3,000 to 4,000 milligram hours had been reached. The treatments were then given weekly and finally biweekly, until the condition of the patient warranted a cessation of the treatments. Frequent examinations were insisted on to keep the patient under control. A total dosage of from 8,000 to 10,000 or more milligram hours was thus recorded.

Fourteen patients were treated in this manner (Cases 2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18). A subjective improvement was usually noticed after the third application. The pain decreased, the profuse purulent, creamy discharge became scanty and serous, and the hemorrhage ceased. The general state of health improved correspondingly. After about 3,000 milligram hours of radium element had been given (that is, after from about twenty-one to twenty-four days, the bimanual findings became usually normal. In a few cases such a state was not reached until about 6,000 milligram hours had been applied. The uteri which were firmly fixed at the first examination became freely movable and could be plainly outlined. The adnexa were palpable and the crater in the cervix was covered with healthy granulations, being protected by a grayish or whitish membrane. The parametriums also were free of any indurating bands. In other words, by cautious procedures and careful obser-

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

vation, we established the fact that on an average from 3,000 to 4,000 milligram hours of radium element were necessary to attain an apparently objective cure.

This knowledge led to the second mode of treatment, which I may term the "intensive method." Just as maximum dosage of Roentgen rays may be concentrated into the possibly shortest space of time, so the milligrammage of radium element might be given within the shortest limit of time, and from 3,000 to 4,000 milligram hours of radium element were applied within from sixty to eighty consecutive hours.

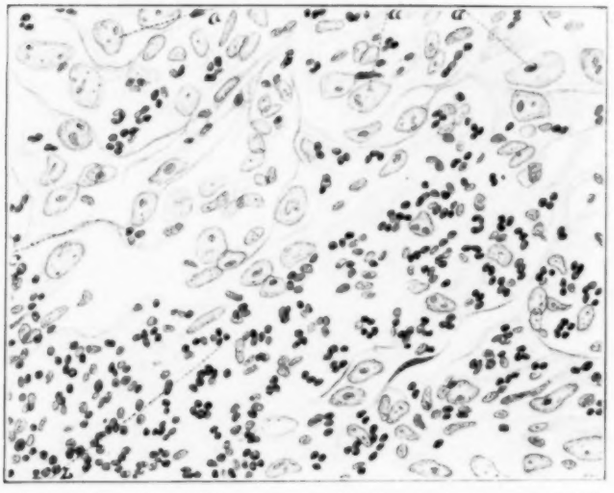

Fig. 3 (Case 33).—High power magnification of tissue removed Feb. 18, 1915, after 2,400 milligram hours of radium element had been applied from Feb. 6 to 8, 1915: *a*, enlarged carcinoma cells; *b*, lymphocytic infiltration; *c*, note connective tissue fibers surrounding groups of carcinoma cells.

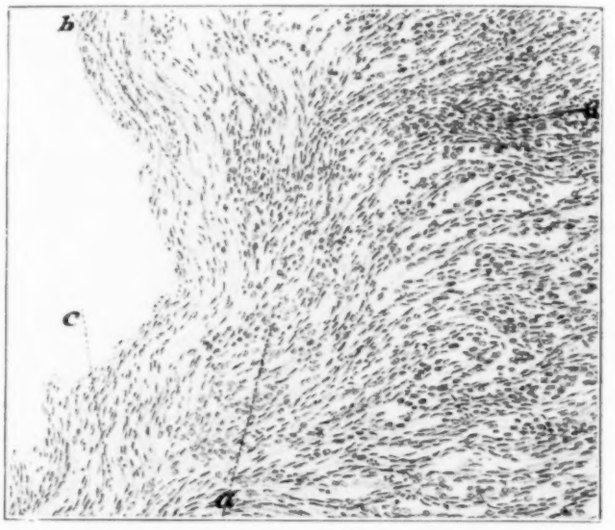

Fig. 4 (Case 33).—Low power magnification of a section of tissue removed Feb. 28, 1915, after 4,800 milligram hours of radium element had been applied from Feb. 6 to 8 and Feb. 18 to 20, 1915: *a*, carcinoma cells; *b*, connective tissue cells; *c*, area reproduced in Figure 5 under high power.

Ten cases in particular (Cases 1, 3, 4, 14, 20, 23, 25, 26, 27 and 28) were thus treated. Although we obtained the same primary results as with the first method, we, however, noted the following points:

1. The apparently objective cure was not reached any sooner than with the first method.

2. The associated symptoms were exceedingly stormy and much severer. They consisted, chiefly, in a marked loss of weight, strength and appetite, with hyperpyrexia, obstinate vomiting, profuse diarrheal stools and obstinate dysuria. Although these symptoms were only transitory, lasting from eight to ten days, the patient suffered much, a condition which we rarely observed in the cases treated by the first or "intermittent method." If such manifestations did occur in this method, they were very mild and of very short duration, lasting usually a day or two.

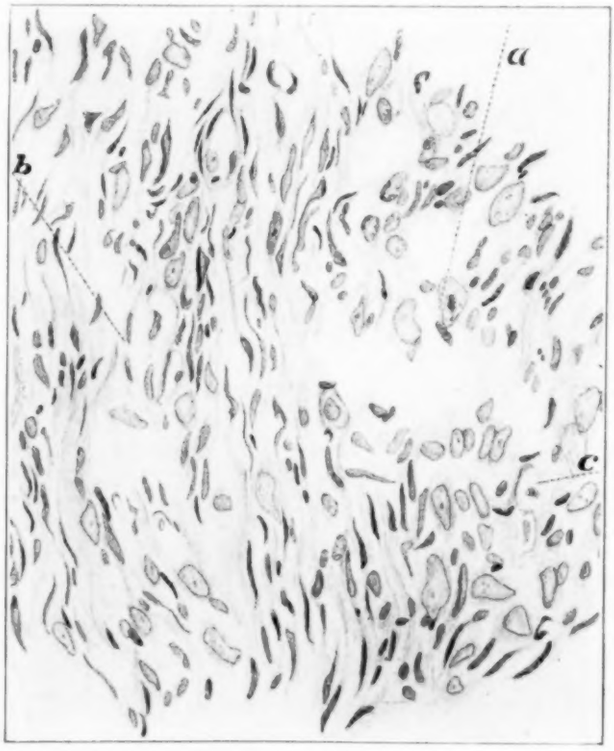

Fig. 5 (Case 33).—High power magnification of area marked *c* in Figure 4: *a*, area of necrobiotic tissue; *b*, area of connective tissue; *c*, cytolytic carcinoma cell.

3. Destruction, ulceration or necrosis of the tissues was of regular occurrence. Repair of these defects was slow. Fistula formation, vesicovaginal, rectovaginal or even intestinovaginal, occurred in ten cases. However, I wish to state that fistula formation existing at the time of the beginning or taking place during the first few days of the course of the treatment must be ascribed to the extensive cauterization. The damaging action of the radium rays is a contributing cause (Cases 1, 4, 6, 15, 20, 26, 29 and 46), while fistula formation occurring from three to four weeks after the beginning of the radium applications must be directly attributable to the destructive action of radium, and extensive invasion of the bladder or bowel with cancer forms the predisposing cause (Cases 2, 8 and 33).

Finally, the following plan of treatment was adopted and carried out in the rest of the cases: A course consists of from six to eight séances of from ten to twelve hours each, with an interval of from thirty-six to sixty hours. This course is followed by an intermission of three weeks. If a bimanual examination made at this time reveals an apparent cure, two or

three applications of from 500 to 600 milligram hours of radium element are given every second or third day. Another interval of three weeks is allowed, and if the examination then reveals a normal condition, the treatment is considered terminated. Negative findings, of course, are followed by another course of from 3,000 to 4,000 milligram hours. This "interval method" gave the best subjective and objective results with a minimum of concomitant symptoms, so that I consider it the method of choice.

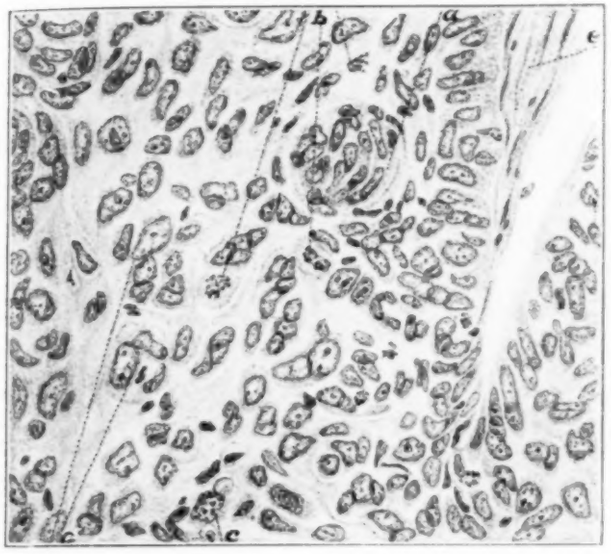

Fig. 6 (Case 39).—High power reproduction of cervical tissue removed March 16, 1915: *a*, nest of carcinoma cells; *b*, karyolysis of nuclei; *c*, granulation of protoplasm; *d*, vacuolation of protoplasm; *e*, connective tissue.

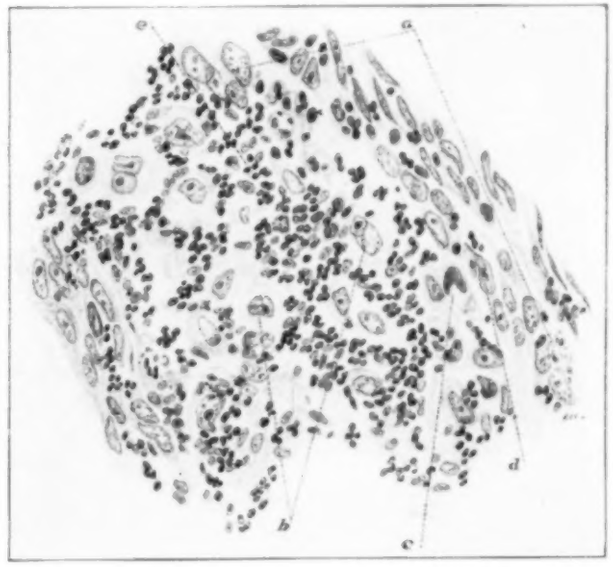

Fig. 7 (Case 39).—High power magnification of tissue removed from center of cervix, March 28, 1915, after 1,600 milligram hours of radium element had been applied from March 20 to 26, 1915: *a*, degeneration of nuclei; *b*, granulation of protoplasm; *c*, degenerating carcinoma cell; *d*, mitosis of cell; *e*, lymphocytes.

Lead filters of 1, 2 and 3 mm. thickness were used in my first work. A 1 mm. filter was deemed sufficient for intra-uterine applications, while the heavier filters were employed in vaginal, rectal and vesical cases. Following the advice of Adler, Werner and others, I soon replaced the lead with brass filters of from 1 to 1.5 mm. thickness. Whether or not the lead filters cause severer latent destructions of tissue than brass filters I am unable to prove. Such disturbances occurred either in very advanced cases of carcinoma, with breaking down uterine or vaginal walls, or in extensively cauterized tumors, as mentioned before. The secondary rays produced in the metal fibers were arrested by surrounding the filter with a cot made of pure Para rubber of a thickness of from 1 to 3 mm. The healthy vaginal walls were protected by snugly packing the vaginal canal with gauze, Para rubber or lead plates surrounded by rubber and gauze.

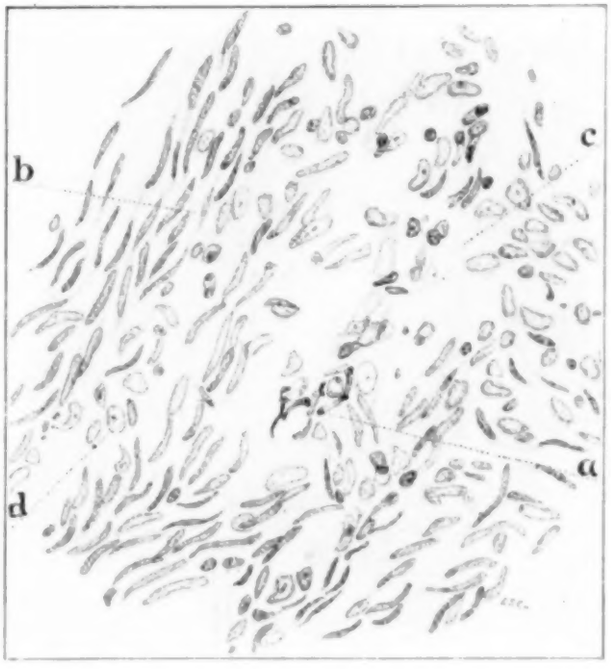

Fig. 8 (Case 39).—High power magnification of tissue removed April 7, 1915, after 3,700 milligram hours of radium element had been applied from March 26 to April 4, 1914: *a*, macrophagia-connective tissue cells; *b*, connective tissue cells; *c*, necrobiotic carcinoma cell; *d*, vacuolation of protoplasm.

CLINICAL RESULTS

Tables 2 to 5 show at a glance the results of the radium treatment. The amount of the milligram hours of radium element used, and beginning and duration of the treatment and the present condition are enumerated for each case. Of the ten cases of Table 2, one case was refractory, and nine cases evidenced a subjective and an objective improvement. Objective improvement indicates negative findings on bimanual palpation. Five of this group have succumbed to the disease. One has remained well since April, 1914, one since October, 1914, and one since January, 1915. Two cases, 39 and 40, are of too recent date to permit an expression as to the remote results. The primary results in these cases, however, are very good. Three of these patients (Cases 12, 16 and 18) were subsequently subjected to an abdominal panhysterectomy.

Fourteen inoperable cases, enumerated in Table 3, were treated only with radium. They were far advanced or extremely cachectic cases or had constitutional manifestations contraindicating even a cauter-

ization. Ten have died or are slowly succumbing to the disease. Four are free of all objective and subjective symptoms. They, and three cases not yet listed, were treated only recently; and considering the poor results obtained in the other ten cases, I must withhold a final opinion. One case (Case 14) had, after the completion of radium treatment, a panhysterectomy.

Of the nine recurrent carcinomas, listed in Table 4, five show an entirely refractory behavior toward the radium rays. Four revealed a subjective and three also an objective improvement. One of the latter patients died eight months after the beginning of the treatment from an intercurrent disease. She had had a recurrence the size of a pea, which disappeared after

TABLE 1.—CANCERS OF PELVIC ORGANS TREATED WITH RADIUM

Case No.	Name of Patients	Hospital Number	Age, Yrs.	Date of Adm.	Uterine	Rectal	Vesical	Milligram Hours Radium Element	Operable	Recurrent	Inoperable		Remarks
											Cauterized	Not Cauterized	
1	Mrs. B.	Augustana..... 41218	51	9/24/14	+	..	..	4,200	+				
2	Mrs. H.	Augustana..... 40098	49	5/22/14	+	..	..	9,525	..	..	..	+	Cauterization 11/3/14.
3	Mrs. H.	Augustana..... 40717	61	7/23/14	+	..	..	10,350	..	+	..	..	Op. four years ago.
4	Mrs. R.	Augustana..... 40944	39	8/25/14	+	..	..	6,775	+				
5	Mrs. D.	Augustana..... 39516	32	3/23/14	..	+	..	9,900	..	..	..	+	
6	Mr. E.	Augustana..... 40405	74	6/29/14	..	..	+	3,150	+				
7	Mr. J.	St. Mary's..... 25176	57	6/30/14	..	+	..	2,175	+				
8	Mrs. K.	St. Mary's..... 24058	38	3/13/14	+	..	..	5,700	..	+	..	..	Cauterization 9/16/13
9	Mrs. K.	Augustana..... 39778	66	4/22/14	+	..	..	6,320	..	..	+		
10	Mrs. McQu.	Augustana..... 39516	29	3/23/14	+	..	..	3,375	..	+			
11	Mrs. McC..	St. Mary's..... 24096	47	3/17/14	+	..	..	7,500	..	..	+		
12	Mrs. M.	St. Mary's..... 23957	52	3/ 7/14	+	..	..	7,875	..	..	+	..	Became operable.
13	Mrs. P.	Augustana..... 40270	63	6/11/14	+	..	..	2,575	..	+			
14	Mrs. R.	Augustana..... 40202	43	6/ 4/14	+	..	..	9,250	..	..	..	+	Became operable.
15	Mrs. C. S. .	Willard Hosp.	52	4/ 4/14	+	..	..	8,312	..	..	..	+	Care. corp. uteri.
16	Mrs. Th. ...	Augustana..... 39321	53	3/ 4/14	+	..	..	9,043	..	..	+	..	Became operable.
17	Mrs. V.	Augustana..... 39755	64	4/19/14	+	..	..	3,525	+	..	..	..	Also cauterization.
18	Mrs. W.	Augustana..... 39469	35	3/19/14	+	..	..	8,700	..	..	+	..	Became operable.
19	Mrs. W.	Augustana..... 40568	48	7/14/14	+	..	..	3,750	..	..	..	+	
20	Mrs. P.	Augustana..... 40456	45	7/ 4/14	+	..	..	3,500	..	+			
21	Mrs. J.	Augustana..... 40349	26	6/22/14	..	+	..	1,125	..	..	..	+	
22	Mrs. R.	Augustana..... 41305	32	10/ 7/14	+	..	..	4,000	..	..	+		
23	Mrs. Sk.	Augustana..... 41221	53	9/25/14	+	..	..	6,800	..	..	+		
24	Mrs. B.	Washington Bvd. 8968	52	10/17/14	+	..	..	4,150	+	..	..	..	Care. corp. uteri.
25	Miss Ro. ...	Washington Bvd. 8902	53	10/ 1/14	+	..	..	8,875	..	..	..	+	
26	Mrs. H.	Augustana..... 41612	52	11/21/14	+	..	..	2,300	..	+	..	..	Cauterized 11/22/14.
27	Mrs. M.	West Side..... 28985	48	11/27/14	+	..	..	4,150	..	..	..	+	Sarcomatous myoma ?
28	Mr. St.	St. Mary's..... 26857	52	12/29/14	..	..	+	3,600	..	..	..	+	
29	Mrs. T.	Augustana..... 41944	49	1/ 5/15	+	..	..	3,500	..	..	+		
30	Mr. To.	St. Mary's..... 27096	58	1/23/15	..	..	+	2,400	..	..	..	+	
31	Mr. A. M. ..	Willard.....	52	2/10/15	..	+	..	4,500	..	..	..	+	
32	Mrs. M.	Augustana..... 42319	42	2/15/15	+	..	..	5,175	..	+			
33	Mrs. H.	Post-Graduate...	43	2/ 6/15	+	..	..	4,800	..	..	..	+	Colored.
34	Mrs. H.	St. Mary's..... 27533	33	3/ 3/15	+	..	..	2,800	..	+			
35	Mrs. C.	St. Mary's..... 27590	52	3/ 9/15	+	..	..	3,900	..	+			
36	Mrs. L.	Augustana..... 42538	60	3/ 9/15	+	..	..	2,925	..	..	+		
37	Mrs. W.	Norwegian Deaconess..	63	3/ 7/15	+	..	..	1,700	..	..	..	+	
38	Mrs. J.	St. Mary's..... 27560	36	3/ 5/15	+	..	..	2,550	+				
39	Mrs. Sl.	St. Mary's..... 27649	65	3/15/15	+	..	..	3,700	..	..	+		
40	Mrs. DeR. .	St. Mary's..... 27978	56	4/14/15	+	..	..	5,650	..	..	+		
41	Mrs. St. A.	St. Mary's..... 27982	49	4/15/15	+	..	..	3,950	+				

TABLE 2.—INOPERABLE CANCERS TREATED WITH CAUTERIZATION AND RADIUM

Case Number	Cause of Inoperability	Date of Cauterization	Total Mg. Hrs. of Radium Element Applied	Duration of Treatment	Primary Results			Further Treatment	Results and Present Condition
					Refractory	Subjective Improvement	Objective Improvement		
9	Involvement of bladder and parametrium	4/23/14	6,320	5/12/14 to 7/ 5/14	....	Yes	....	None.....	Died from bladder and vulva invasion.
11	Involvement of bladder and rectum	3/18/14	1,750 3,200 2,550	4/14/14 to 4/23/14 6/17/14 to 7/23/14 8/12/14 to 8/23/14	....	....	....	.....	Died. Patient after remarkable primary result neglected to return until June. Radium now refractory.
12	Extensive involvement of parametrium and rectum	3/ 8/14	7,875	4/ 2/14 to 6/11/14	....	Yes	Yes	None.	Died Dec. 20, 1914 from July 14, 1914. Abdominal panhysterectomy invasion of rectum.
16	Involvement of parametrium	3/ 5/14	9,043	4/ 1/14 to 9/ 9/14	....	Yes	Yes	April 24, 1914. Abdominal panhysterectomy	Well. Pelvis normal
18	Marked cachexia...	3/20/14	8,700	4/ 1/14 to 7/31/14	....	Yes	Yes	.....	Died August, 1914 from invasion of bladder and exhaustion.
22	Extensive involvement of vaginal vault	10/ 8/14	4,000	10/17/14 to 10/22/14	Yes	....	....	.....	Died December, 1914 from exhaustion.
23	Extensive involvement of vagina and parametrium	9/26/14	6,800 1,200	10/19/14 to 11/ 1/14 2/ 9/15 to 2/11/15	....	....	....	.....	Well. Pelvis normal.
29	Involvement of anterior vaginal wall	1/ 6/15	3,500	1/21/14 to 1/24/15	....	Yes	Yes	Repair of vesicovaginal fistula March, 1915	Well except fistula.
39	Involvement of parametrium	3/16/15	3,700 850	3/20/15 to 4/ 4/15 4/26/15	....	Yes	Yes	.....	
40	Involvement of bladder and parametrium	4/ 7/15	5,650	4/15/15 to 5/ 6/15	....	Yes	....	.....	June 11, 1915; metastasis of right inguinal glands.
36	Pyometra; involvement of parametrium	3/10/15	2,925	3/12/15 to 3/23/15	....	Yes	Yes	.....	Panhysterectomy could not be completed. Supravaginal amputation.

radium treatment and cauterization. Another patient after a successful primary result did not return for a reexamination, and has not been heard from. The third one has again a healthy vagina, and the pelvis is free from indurating masses, though the entire vaginal canal was a mass of carcinomatous growths extending up into the base of the right broad ligament and down into the fourchet.

Of the eight operable cases (Table 5) treated by surgery and radium, one patient died nine months afterward from a metastasis of the liver, another one two months later from a severe hemorrhage from the vagina. The others are at this time in a normal condition and do not show a recurrence. The average time which has elapsed since the operation is eight months.

TABLE 3.—INOPERABLE CANCERS TREATED ONLY WITH RADIUM

Case Number	Cause of Inoperability	Total Mg. Hrs. of Radium Element Applied	Duration of Treatment	Primary Results			Further Treatment	Result and Present Condition
				Refractory	Subjective Improvement	Objective Improvement		
2	Extensive involvement of vagina	9,525	5/30/14 to 9/24/14	....	Yes	....	.....	Cauterization Nov. 3, 1913. Has vesicovaginal fistula; cachectic.
5	Involvement of entire vagina, rectum, vulva	9,900	6/ 1/14 to 8/19/14	Yes	....	....	.....	Had colostomy. Died from exhaustion.
14	Involvement of right ureter and sigmoid	9,250	6/ 7/14 to 8/ 5/14	....	Yes	Yes	.....	Aug. 5, 1914, abd. panhysterectomy; resection of sigmoid. Died Nov. 20, 1914, from carcinomatosis.
15	Involvement of parametrium and rectum	8,312	4/ 4/14 to 6/17/14	....	Yes	....	.....	Oct. 10, 1913, colostomy. Died Jan., 1915; cancer of liver.
19	Chronic endocarditis with decompensation	3,750	7/19/14 to 8/ 9/14	Yes	....	....	.....	Died, August, 1914, from endocarditis
21	Extensive involvement of rectum	1,125	7/29/14 to 8/ 8/14	Yes	....	....	.....	Patient refused further treatment on account of rectal tenesmus caused by radium; had colostomy; died.
25	Cachexia and local extension of tumor	8,875	11/ 6/14 to 12/ 5/14	Yes	....	....	.....	Died.
27	Pyosalpinx and involvement of abdominal organs	4,150	11/27/14 to 12/ 3/14	Yes	....	....	.....	Died.
28	Extensive involvement of bladder	3,600	12/31/14 to 1/25/15	....	Yes	Yes	Dec. 31, 1914, cystotomy for insertion of radium	Died January, 1915, from exhaustion after hip amputation for path. fracture of femur due to metastasis.
30	Extensive involvement of bladder	2,400	1/31/14 to 2/ 2/15	....	Yes	Yes	Jan. 25, 1915, exploratory cystotomy	Bladder free from tumor mass; gained in weight and strength.
33	Cachexia; vagina and bladder invaded	4,800	2/ 6/15 to 2/22/15	Yes	....	....	.....	Developed vesicovaginal fistula; refused to continue treatment. Died.
36	Pyometra.....	2,925	3/12-23/15 to 3/22/15	....	Yes	Yes	.....	Cervix now normal.
37	Involvement of bladder	1,700	3/15/14 to 3/20/15	Yes	....	....	March 8, 1915, exploratory laparotomy	Had a thrombophlebitis. Exacerbation. Died from septicemia.
31	Extensive involvement of rectum	4,800	2/12 to 4/ 2	....	Yes	Yes	.....	Rectum normal and freely movable. Returned to work.

TABLE 4.—RECURRENT CANCERS

Case Number	Date of Primary Operation	Character of Operation	Date of Recurrence	Condition of Pelvic Organs	Total Mg. H. of Radium Element Applied	Duration of Treatment	Primary Results			Remarks and Results
							Refractory	Subjective Improvement	Objective Improvement	
3	July, 1910	Vaginal panhysterectomy	June, 1914	Nodule and ulcer size of bean in vaginal vault	10,350	7/27/14 to 11/30/14	....	Yes	Yes	Patient succumbed to an intercurrent disease, March, 1915; cauterization 7/31/14.
8	Jan. 9, 1913 Sept. 16, 1913	Abd. hysterectomy Vag. cauterization	Sept. 1913	Involvement of entire vagina	5,700	4/ 6/14 to 5/28/14	....	Yes	....	Vesicovaginal fistula. Died Sept. 21, 1914, from exhaustion.
10	Oct. 1913	Vag. hysterectomy	Oct. 1913	Involvement of vagina, vulva and perineum	3,375	4/25/14 to 5/13/14	Yes	....	....	Septicemia after third radium treatment. Died May, 1914.
13	May	Vag. hysterectomy	Apr. 1914	Involvement of entire vagina	2,275	6/13/14 to 6/15/14	....	Yes	Yes	Vagina healed immediately; did not return for treatment.
20	Aug. 12, 1912	Vag. hysterectomy, salpingo-oophorectomy sinistra	Mar. 1914	Mass involving right adnexa	3,500	7/10/14 to 7/13/14	Yes	....	....	Developed vesicovaginal intestinovaginal fistula; succumbed to exhaustion August, 1914.
26	Sept. 2, 1914	Abd. panhysterectomy	Nov. 1914	Ulcer in vaginal vault	2,300	11/23/14 to 11/25/14	Yes	....	....	Nov. 23, 1914, cauterization of vag. vault; developed intestinal fistula; died Dec. 27, 1914; exhaustion.
32	Oct. 1913	Vaginal hysterectomy	Apr. 1914	Ulcer in vaginal vault involving right parametrium and bladder	5,175	2/15/15 to 3/23/15	Yes	....	....	April 20, 1915, tumor increasing in size; patient loses weight and strength; has much pain.
34	Fall, 1914	Abd. panhysterectomy	.....	Mass involving vag. vault extending to right up to brim	2,800	3/ 9/15 to 3/20/15	Yes	....	....	Losing weight and strength.
35	March, 1914	Vag. and abd. panhysterectomy	Aug. 1914	Ulcer involving entire vagina and right parametrium	3,900	3/10/15 to 4/ 6/15	....	Yes	Yes	April 30, 1915, vagina and vulva normal and free of any nodular masses.
45	4/25/15 6/19/15	Percy cautery Abd. hysterectomy	Never; compl. recovery	Crater involving parametriums	3,950	6/ 1/15 to 6/12/15	....	Yes		

HISTOLOGIC FINDINGS

The action of the gamma rays on carcinoma tissue has been studied in eight cases, namely, six uterine (Cases 12, 14, 16, 24, 29 and 39); one rectal (Case 31), and one skin cancer (Case 85). The latter has been added, as it affords a particularly favorable instance for the study of the changes occurring in carcinoma cells by the action of radium. The reproductions of the first microscopic sections (Figs. 1 and 6) were made from tissues removed from the tumor before the beginning of the radium treatment. The time of removal of the other sections is stated beneath each illustration; also the amount of radium element applied preceding the removal of the sections, and the time duration of the application of each course.

The histologic changes may be divided into four stages:

The first stage is characterized by an enlargement of the carcinoma cells, a hyperchromatosis and a pyknosis of the nuclei. They are evident in all the cases examined. These changes usually occur within about ten days after the first application of radium (Figs. 3 and 7).

In the second stage we observe karyolysis, karyorrhexis, cytolysis and cell detritus. Figure 3 shows many evidences of such changes. They are observed as early as from the first to the third week of the treatment.

The third stage shows an absorption of the cellular and nuclear débris by phagocytes. Macrophages and microphages are concerned in this step. Microphagic activity is highly evident in Figure 3, while macrophages are seen to be active in Figure 8.

The fourth stage is the stage of connective tissue proliferation and scar formation. It completes the histologic cure of cancer. The places left vacant by the dead carcinoma cells are immediately filled by young fibroblasts derived from the connective tissue stroma of the tumor. The fibroblasts become differentiated. Figure 4 shows the connective tissue regeneration. The fourth stage appears usually after from the first to the third month, but may occur much sooner.

A difference frequently exists between the clinical results and the histologic findings. For instance, in Case 12 there was evidence of a completely destroyed cancer tumor, yet the patient succumbed to a bowel invasion, proving that some cancer cells either remained uninfluenced by the radium or regenerated after the subsidence of the action of the rays. Therefore, certain questions arise which call for definite answers before we can positively state that radium rays cause a degeneration and ultimate death of cancer tissue and a simultaneous regeneration of connective tissue.

1. Are we able by histologic examination to differentiate the necrobiotic changes in the carcinoma cells brought about by natural and artificial conditions from those caused by the influence of radium rays? It is evident that we cannot do so. Cells undergo necrobiotic changes in the course of their existence. Heat, caustics and alcohol, brought in contact with the tissues, may produce the same changes, as is well known. However, such general and extensive changes as seen in these specimens, the absence of cell degeneration as evidenced in the first sections, and, finally, the regularity of their occurrence in all the tissues investigated, even in those not previously cauterized, permit us to state that they must be caused by the action of the gamma rays.

2. Can we, by examination of small pieces of tissue removed from the growth, determine the extent and intensity of the action of radium rays? We cannot from such an examination, but could do so from serial sections of all the organs removed either intra vitam during operations, or, preferably, postmortem.

I have, fortunately, four cases in which an abdominal panhysterectomy was performed after a clinical cure of the cancer by the use of radium rays was obtained (Cases 12, 14, 16 and 24). Serial sections were made from the tissues removed. A microscopic examination revealed that the cytolytic changes were generally present throughout the organs removed. This does not prove that distantly located foci were not left behind. As a matter of fact, Patients 12 and 14 died subsequently from cancer. This shows that viable cancer cells were left behind somewhere in the pelvis. Bumm examined tissues acted on by gamma rays and removed afterward during postmortem examinations. He estimated that the intensity of the gamma rays

TABLE 5.—CANCERS TREATED BY SURGERY AND RADIUM

Case Number	Date of Operation	Character of Operation	Complications of Convalescence	Mg. Hrs. of Radium Element Applied	Duration of Radium Treatment	Result	Remarks and Present Condition
1	9/25/14	Abd. panhysterectomy; vag. cauterization	Vesico-abd. and vesicovag. fistula	4,400	10/10/14 to 10/26/11	Perfect recovery	Died two months afterward from a vaginal hemorrhage.
4	8/26/14	Vag. cauterization; abd. panhysterectomy	Vesicovaginal fistula	6,775	9/ 6/14 to 10/13/14	Recovery, but fistula	Well, April, 1915; fistula closed.
6	7/17/14	Perineal cystotomy and cauterization	None	3,150	8/ 3/14 to 9/ 1/14	Recovered.	
7	7/ 2/14	Resection of 8″ of rectum; perineal operation	None	2,175	7/16/14 to 8/ 1/14 and 10/30-31/14	Recovered....	Dying from metastatic cancer of liver.
17	4/20-24/14	Vag. cauterization; abd. panhysterectomy	None	3,525	5/15/14 to 5/20/14	Recovered.	
24	10/29/14	Abd. panhysterectomy...	None	4,150	10/21-23 and 11/11-13/14	Recovered....	Oct. 21, 1914, diagnostic curettage; well.
38	3/16/15	Abrasion of mucosa; amputation of cervix.....					
	3/16/15	Abdominal hysterectomy	None	2,550	3/21 to 3/28/15	Recovered.	
41	4/16/15	Vag. cauterization; abd. panhysterectomy	None	3,950	4/19 to 5/4	.....	Extensive involvement of anterior vaginal wall. Really an inoperable case; impossible to remove entire growth.
44	5/20/15	Abd. panhysterectomy; cauterization	None	4,000	5/23-31/15	.....	Extensive involvement of right parametrium; impossible to remove entire tumor mass.

sufficient to destroy carcinoma tissue extended into a radius of 4 cm. Within this area of intensity, carcinoma cells were not found present; beyond it, however, typical unchanged cancer cell nests were still found to exist. In other words, extensive carcinoma growths are only partially destroyed by gamma rays. This area of destruction, however, has a diameter of 8 cm., and enables us to reach tissues which a knife could never remove.

3. Is it possible by such microscopic examinations to state whether a carcinoma cell has perished or whether it might not regenerate after the action of the radium rays ceases? The following citation will illustrate the answer to this question: Chéron and Rubens-Duval treated a patient suffering from an inoperable carcinoma of the cervix with radium during November, 1910, and January, 1911. The patient was apparently clinically cured. She died from an intercurrent disease (a cerebral softening) during April, 1912, fifteen months after the beginning of the radium treatment. All the internal organs and tissues were removed postmortem, and a careful serial histologic examination of all the tissues did not reveal a single carcinoma cell at any place of the organism. A complete anatomic cure by radium rays has thus been demonstrated.

My investigations demonstrate the uniformity and general extent of the necrobiotic changes brought about in the carcinoma cells by the action of the gamma rays. Bumm's researches fix the extent of the area of intensity of the rays within which a carcinoma will become destroyed, and Chéron and Rubens-Duval's case proves the capability or efficiency of the radium rays to bring about an anatomic cure of cancer.

CONCLUSIONS

1. The best method of applying radium is the interval method by which from 3,000 to 4,000 milligram hours of radium element are applied within from about fourteen to twenty-one days.

2. The alpha and beta rays must be arrested by a brass filter of from 1 to 1.5 mm. thickness.

3. The secondary rays, forming in the metal filter, are rendered inert by a rubber cot of from 1 to 3 mm. thickness.

4. Inoperable cancers that are not far advanced so that cauterization is not contraindicated yield satisfactorily to radium therapy.

5. Advanced inoperable and recurrent cancers are ordinarily refractory toward the radium rays. Any improvement is at least very temporary.

6. The patients treated with the rays after surgical removal of the organs have done well, although the time elapsed since the treatment averages eight months.

7. Patients suffering from cancer should be treated surgically and then radiologically, and if surgery is contraindicated they should receive radium treatment, which at least relieves the subjective symptoms and often the objective ones.

8. The time elapsed since the commencement of the radium treatment in all the cases enumerated is too short to permit definite opinion as to the remote results of radium treatment.

9. Clinical and histologic studies enable us to pronounce the radium rays a valuable addition to the therapy of cancer.

10. It will require years of constant observation to demonstrate such results as anatomic cures.

11. The same measure that is applied to establish the efficacy of surgical procedures in cancer treatment must certainly be employed in radiotherapy.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BURNAM AND KELLY, AND SCHMITZ

DR. J. F. PERCY, Galesburg, Ill.: Ewing of New York said a few years ago that the balance in cancer is easily upset; and this must be true, because there are a number of methods of destroying or inhibiting cancer that have a certain number of clinical cures to their credit. It would be interesting if we could go back in a historical way to these various methods and determine just how much they have accomplished. One thing has been brought out by both of these papers, and that is the totally inexplicable way some cases are clinically cured and other cases apparently of the same type are either made worse or not affected by the same treatment. The problem of the treatment of inoperable cancer of the uterus has always been of the gross mass, and it is a question whether or not radium, in the great mass of cancer usually seen in the cervix, is as valuable as some other method that will at once, or in a comparatively few minutes, get rid of this gross mass. Another problem is the metastasis, and I am glad that both the essayists have mentioned an immunity, or, at least, suggested it. This immunity is undoubtedly developed in greater or less degree, and without doubt takes care, in many cases, of the metastases after the destruction of the gross mass. At least I am convinced of this from my own experience. I am especially interested in the destruction of the gross mass by heat. I am convinced that this method is the most certain of any of the methods that have been brought to our attention. In addition, it does not require specialized judgment and the apparatus required is comparatively inexpensive. One of the difficulties of radium and the Roentgen ray in attacking the gross mass of cancer is that they break down a lot of cancer cells, and if drainage is not provided, an overdose of the broken-down cancer cells may be absorbed and kill the patient. In other words, even with radium or the Roentgen ray, if one attacks the gross mass he must provide for some form of drainage. This is easily done with the heat technic. It is not easily done with either radium or the Roentgen ray.

DR. S. M. D. CLARK, New Orleans: The two papers show definitely that we are not marking time in the warfare on cancer. We are beginning to see rays of light, and I feel confident that if the present pressure is kept up, our results will progressively improve. I am sorry that I cannot discuss the subject from the radium point of view, but since I note that the best results obtained by one of the essayists was when using the radical operation after the growth had been transformed by using radium, it seems appropriate to consider cancer of the uterus from another angle.

Though the Percy heat method has great merit, still when viewed in the light of a cure, it falls short and is to be looked on more as an adjunct or link in the chain of treatment. Time is too short to go into the detail of my combination method, but its chief point rests in being able to transform inoperable into operable cases by performing the work as a two-stage operation. At the first sitting the abdomen is opened and both internal iliacs and one ovarian artery are tied, primarily for the purpose of starving the growth, as well as to control secondary hemorrhage. Heat is applied at the same time. After three to five weeks' interval the patient is transformed constitutionally and locally, when the radical removal is done. This method increases operability and decreases the primary mortality. If we keep accurate records of our work, in ten years stock can be taken of our results, and the best method adopted.

DR. HENRY SCHMITZ, Chicago: It is a question of developing first the therapy, and second the technic of the application of radium. If we do know the amount and the manner in which we should use it, our results will improve. My first cases treated were not so successful as at present. I feel

that radium will do more in the eradication of cancer than any other means. I have applied surgery, heat and everything I possibly could use, but since I have been using radium I feel more confident of benefiting my patients.

DR. CURTIS F. BURNAM, Baltimore: I omitted one thing that I intended to say, that in the beginning we catheterized and curetted our big masses. More recently we are not doing that. So far as I know, there is no general upset in the treatment. We give a single treatment, and repeat it in six weeks if the growth is still there. If it has gone, we wait three months; but if it has not gone we repeat; and the patient rarely stays in the hospital longer than the day of treatment.

THE ROENTGEN-RAY TREATMENT OF SKIN DISEASES*

GEORGE M. MacKEE, M.D.

Instructor in Dermatology, College of Physicians and Surgeons, Columbia University; Chief of the Department of Dermatology and Syphilology, Vanderbilt Clinic; Consulting Dermatologist, St. Vincent's Hospital; Visiting Dermatologist, Sea View Hospital

NEW YORK

THE DERMATOLOGIST AND THE RADIOLOGIST

Now that Roentgen-ray work is becoming highly specialized, there seems to be a tendency to separate

Fig. 3.—A group of hypertrophic lichen planus papules on the wrist. Also two common warts, one on the little finger and one at the base of the index finger.

dermatology from roentgenotherapy. This is both desirable and undesirable. So far as concerns the Roentgen-ray treatment of skin diseases, two general attributes are essential — a knowledge of dermatology and skill in modern Roentgen-ray technic. The dermatologist possesses the former and he can easily acquire the latter, for the difficulties are more imaginary than real. The pure roentgenologist, while being expert in Roentgen-ray technic, lacks a dermatologic training, as also do many of the physicians who refer patients to him for treatment. To avoid errors in diagnosis and the obvious consequences, it would seem advisable to adhere to one of three schemes: for the dermatologist to employ the Roentgen ray; for the roentgenologist to have at least a clinical knowledge of dermatology; or for both to combine their skill in behalf of the patient.

TECHNIC

In a short, practical paper of this kind it is not possible actually to describe a technic. A general outline of modern methods may, however, be of interest. Two methods are in vogue at the present moment, namely, intensive and divided doses.

Intensive Method.—Here the quality of the ray used is ascertained by direct measurement (Benoist, Walter or Wehnelt instruments), while it is maintained by means of indirect measurement (milliamperemeter, spark-gap, etc.). The quantity is measured directly, through the employment of reliable radiometers such as those originated by Holz-

Fig. 4.—Same as Figure 3 after one dose of H 4, B 9 was applied to the lichen lesions. Note the area of temporary pigmentation at the wrist. Note also that the warts have disappeared without having been exposed to the ray.

knecht and Corbett. In this way every dose is estimated as accurately as modern science will allow. An intensive treatment may consist of enough rays to produce a second degree Roentgen dermatitis, a simple erythema, a loss of hair without erythema, or a dose that is too small to produce a visible effect on the normal skin, but yet too large to allow of its repetition within three or four weeks. The method is thoroughly established and is sufficiently accurate for all practical purposes. No better example of its accuracy can be demanded than the excellent results associated with the intensive Roentgen-ray treatment of ringworm and favus of the scalp.

There is a difference of opinion regarding the quality of ray to be employed in different cutaneous diseases. Contrary to

Fig. 5.—Chronic eczema with acute exacerbations.

the general consensus, I have found a "hard" ray (B 8 to 10) preferable for routine work and seldom use a ray of lower penetration.

In considering the quantity, the question of idiosyncrasy and susceptibility should be discussed. True idiosyncrasy must be a very rare phenomenon. Again I direct attention to thousands of cases of tinea tonsurans that have been treated

* From the Department of Dermatology and Syphilology, College of Physicians and Surgeons, Columbia University, New York.

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* On account of lack of space this paper has been abbreviated for THE JOURNAL. It will appear in full in the Transactions of the Section and in the author's reprints.

with intensive Roentgen radiation without a single example of idiosyncrasy having been encountered. As a matter of fact, as an operator becomes more expert and experienced he

Fig. 6.—Same as Figure 5 after three treatments at weekly intervals, totaling about H 6, B 9.

employs the term less frequently. I do not deny the possibility of true idiosyncrasy—it undoubtedly does exist—but it is extremely uncommon. Hypersusceptibility, on the other hand, is very common. Some parts of the body are more

Fig. 11.—Painful plantar wart of 4 years' duration.

sensitive than others. The skin of aged individuals will tolerate larger doses than will the integument of children. Chemicals, such as iodin, tar, mercury, chrysarobin, salicylic acid, etc., will markedly enhance the action of the ray. The skin of individuals suffering from certain diseases—mycosis

Fig. 12.—Same as Figure 11 after two intensive treatments, each of which consisted of H 6, B 9.

fungoides, goiter, eczema, psoriasis—may be hypersensitive. The intensive dose will vary in amount according to the effect desired and the disease treated. In epithelioma, it will be in the neighborhood of 8 or 10 Holzknecht units; in keloid, from 4 to 6 units; tinea tonsurans, 4 to 5 units; eczema and psoriasis, 2 to 3 units, etc.

Fig. 13.—Multiple common warts.

Divided Method.—The divided technic is not as accurate and in some diseases it is not nearly as efficacious as is the intensive method. In fact, there are diseases, such as epithelioma and tinea tonsurans, in which the divided method may even prove injurious. On the other hand, in diseases in which stimulation is beneficial (eczema, psoriasis, etc.) it is as good if not actually superior to intensive treatment. In speaking of the divided method it must be recognized that we

Fig. 14.—Same as Figure 13 after one treatment consisting of H 4, B 9.

are dealing with a modernized technic and not with former obsolete methods in which from 50 to 200 exposures were administered in the treatment of an epithelioma. As a matter of fact, the divided method of today, when compared with older technics, is decidedly intensive.

Briefly the technic is as follows: Certain fixed indirect factors are established and used as "constants." That is to

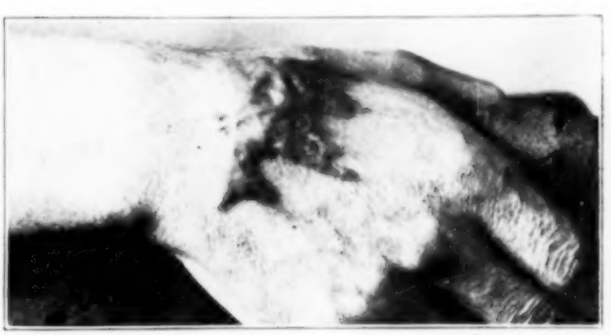

Fig. 17.—An exceedingly hard keloid following an electric burn.

say, the anode of the tube is always at the same distance from the skin; the milliamperage, the spark-gap distance, the length of the conducting wires, the speed of the motor, the transformer cycle, the rheostats, and, in fact, all adjustable

parts are always employed in exactly the same manner for every treatment. Now, with all these "constants" established the time necessary to produce the so-called pastille or erythema dose (about 5 H) is ascertained. Let us assume

Fig. 18.—Same as Figure 17 after five intensive treatments totaling H 40, B 9, filtered through 3 mm. of aluminum.

that the required time is twenty minutes. This may be divided into four treatments of five minutes each or eight treatments of 2½ minutes each, and administered at intervals of from

Fig. 21.—Dermatitis papillaris capillitii (acne keloid) in a negro.

three to seven days, so that the full erythema dose is given in the course of one month.

There are several technics for the divided method; it will

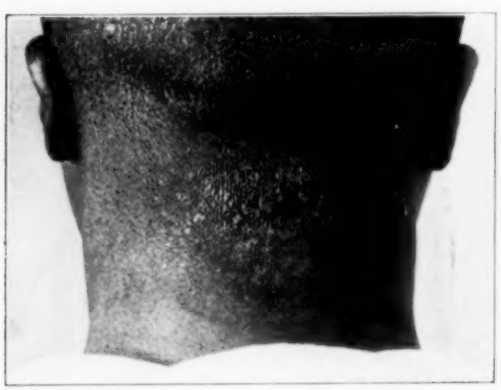

Fig. 22.—Same as Figure 21 after treatment. The lesions were unusually obstinate, and required ten intensive treatments totaling H 50, B 9. The treated skin was depigmented, a defect corrected by using a cutaneous stain.

vary according to the apparatus employed, and, also, in accordance with the training, skill and experience of the operator. Personal equation is an important factor.

DISEASES AMENABLE TO ROENTGEN-RAY TREATMENT

INFLAMMATIONS

Erythema Induratum (Bazin's Disease). — This affection, now known to be a true but benign type of

Fig. 25.—Hypertrophic lupus vulgaris returning after operation.

Fig. 26.—Same as Figure 25 after one intensive Roentgen-ray treatment.

cutaneous tuberculosis, yields readily, as a rule, to the Roentgen ray. One intensive (suberythema) dose will usually suffice to produce a cure in the ulcerative type of the disease. The subcutaneous nodules are more rebellious. Rest, hygiene, tonics, etc., will usually

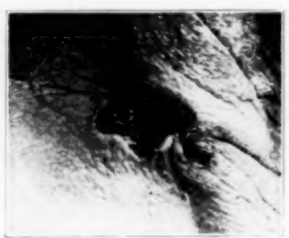

Fig. 32.—Ulcerating basal-cell epithelioma with considerable induration of margin.

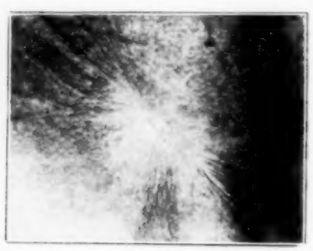

Fig. 33.—Same as Figure 32 after one intensive treatment consisting of H 8, B 9. Treated three years ago—no relapse.

suffice to cure this disease in a few months, but in stubborn cases the Roentgen ray is of considerable service.

Granuloma Annulare.—I have treated only one case of this disease. The patient presented numerous tumors on the hands, arms and ears. Each lesion

Fig. 34.—Ulceronodular epithelioma of inner canthus—a favorite situation and a difficult position for operation.

Fig. 35.—Same as Figure 34 after one intensive treatment of H 8, B 9. Treated three years ago—no relapse.

disappeared under the influence of a single treatment of 4 H units of a B 9 ray — in other words, a suberythema dose. The Roentgen ray, of course, will

have very little if any influence on the future course of the disease.

Prurigo.—Small doses of the Roentgen ray produce favorable effects in this recalcitrant juvenile affection, chiefly through its antipruritic powers. It does not materially alter the course of the disease. The divided-dose technic is indicated here and after one course of treatment an interval of several months should elapse before another course is given in order to avoid possible injury to the epiphyses.

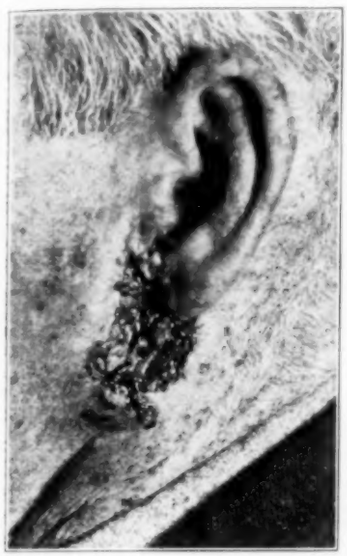

Fig. 38. — Squamous-cell (malignant) epithelioma — hard and deep seated.

Lichen Planus.—From a practical point of view the Roentgen ray is of service only in the hypertrophic type of the disease, when there are a few isolated, resistant patches. Here it is extremely efficacious. A few days after a single suberythema dose the itching ceases and in two or three weeks the lesions disappear.

Psoriasis. — Ordinarily, psoriasis is easily controlled by the proper use of dermatologic remedies, so that the use of the Roentgen ray is limited to resistant lesions or to the so-called inveterate patches of the disease. The psoriatic skin is hypersensitive to Roentgen radiation, possibly on account of the previous use of chrysarobin or other irritating chemicals. For this reason, and also because, as a rule, very little ray is required, it is preferable to employ the divided-dose technic. In stubborn cases the Roentgen ray will be found of real value.

Fig. 39.—Photomicrograph of small piece of tissue removed from lesion shown in Figure 38.

Eczema. — In eczema the Roentgen ray is of service only in the subacute, chronic and rebellious types of the disease, especially where there are a few isolated, thickened, pruritic patches that have resisted ordinary measures. There is, however, one exception, namely, the acute or subacute vesiculosquamous eczema occurring in patches on the dorsal surfaces of the hands and fingers. Here the Roentgen ray is exceedingly efficacious, and is specifically indicated, because this clinical type of the disease is notoriously rebellious to all other therapeutic measures.

The obstinate keratotic eczema of the palms and the soles will usually yield rather promptly to the Roentgen ray after they have refused to respond to other forms of treatment. In most types of eczema, as in psoriasis, the Roentgen ray is not indicated until regular dermatologic remedies have been tried, for, as a rule, the simpler measures will suffice. Again, as in psoriasis, and for the same reasons, the divided-dose technic should be employed.

Fig. 40.—Case in Fig. 38 after two filtered, intensive doses of H 16; no relapse for one year.

Lichenification and Lichen Circumscriptus.—In these affections, a single small dose of the Roentgen ray will usually suffice to overcome the itching at once and cause the eruption to disappear in a few weeks, especially if the treatment is reinforced by ordinary dermatologic remedies.

The divided technic gives equally good results.

Pompholyx (Dyshydrosis). — Fractional doses of the Roentgen ray are a help in combating this affection, which not infrequently is stubborn.

Hypertrophies

Clavus, Callositas and Verrucae. — Corns will usually respond to one or two intensive doses. It is necessary, however, in order to avoid recurrences, to ascertain and overcome the cause, such as pressure from tight or improper shoes. Some of my most brilliant therapeutic results have been obtained in the Roentgen-ray treatment of callositas, or painful plantar

warts; certainly the patients are very grateful for the relief. I know of no other treatment that can compare with the Roentgen ray in efficiency. The thickened horny layer should be removed with a razor and then an intensive dose of the Roentgen ray administered. The first treatment may consist of H 4, B 9. In some instances this one application will suffice. More often, however, a second treatment will be necessary, and this should not be given in less than four weeks from the first application, and the dose may be increased, unless contraindicated, to H 6, B 9. I have never been compelled to give more than three treatments to produce a complete cure, and as yet I have not had a single recurrence. My results with the intensive treatment have been far superior to those obtained before I developed the intensive technic. The common wart (verruca vulgaris) will usually disappear as a result of a single intensive treatment. Not infrequently the treatment of one wart will cause the disappearance of similar lesions in the same neighborhood. Various types of hyperkeratosis may be influenced by the Roentgen ray, such, for example, as senile keratosis, keratosis palmaris et plantaris, ichthyosis, keratodermia, etc.

Fig. 45. — Epithelioma of lip without glandular involvement. The lesion consisted mostly of a keratosis, but there was some clinical infiltration. This should probably be considered a preepithelioma-tous lesion, or a very early epithelioma.

Fig. 46. — Same as Figure 45. The thickened horny layer was first removed, and then two intensive doses of H 8 each were administered. There has been no return over a period of two years. There was a little leukoplakia, which also disappeared.

New Growths

Keloid. — Excellent therapeutic and cosmetic results can be obtained in hypertrophic scars, traumatic and "spontaneous" keloids and acne keloid (dermatitis papillaris capillitii). The Roentgen ray is indicated in these affections not only because of its efficacy, but because there is no other reliable treatment. In very large keloids it is preferable to ablate and then apply the Roentgen ray as a prophylactic. This may be done, also, in small keloids, in order to obtain a perfect cosmetic result. I have never observed a recurrence after Roentgen-ray treatment. Unfortunately, keloid requires large quantities of Roentgen ray, and for this reason the intensive method is to be preferred. A well-developed keloid will necessitate from two to six intensive treatments. It is not safe to apply more than six or eight intensive doses at intervals of from four to six weeks, because of the danger of permanent injury to the skin. In very obstinate cases it is preferable to intervene surgically and employ Roentgen ray as a prophylactic, or to give the intensive doses in courses, each course consisting of three treatments at intervals of four to six weeks, with an interval of one year between courses.

Nevus Vasculosus.—The Roentgen ray is capable of producing good results in vascular nevi. The treatment is apparently more efficacious in deep-seated nevi (cavernous angioma) than in the superficial "portwine" marks. In the past, judging from the literature, radium has produced better results in this affection than has the Roentgen ray, but perhaps the future will see the two agents favorably compared in this respect. More experimental work is required, especially in regard to the quality of ray to be used. The few cases that I have treated have required several intensive doses of a "hard" ray before much effect was observed. It is possible that a "soft" or even an "oversoft" ray will prove more effective.

Rhinoscleroma.—The Roentgen ray is almost a specific in this rare, disfiguring and uncomfortable disease. It should be employed intensively, and on account of the fibrosis a well-filtered, "hard" ray is indicated.

Tuberculosis Cutis.—In the literature one finds reports of cures obtained with the Roentgen ray in tuberculous ulcers of the skin and mucous membranes, but I have found such lesions exceedingly stubborn unless of a benign type, such as lupus vulgaris or tuberculosis verrucosa cutis. The hypertrophic and ulcerative types of lupus vulgaris, even when involving the mucosa, usually yield to from one to three intensive doses. The atrophic type of disease, with deeply embedded (apple-jelly) nodules, resists the treatment; at least this has been the case in my hands. In the treatment of lupus vulgaris I have found the intensive technic superior to the divided dose method.

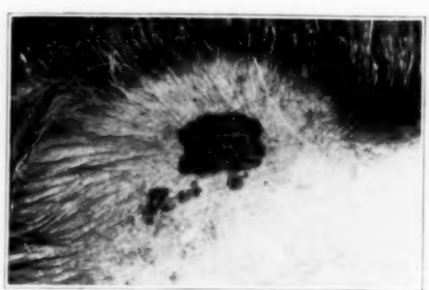

Fig. 47.—Melanoma.

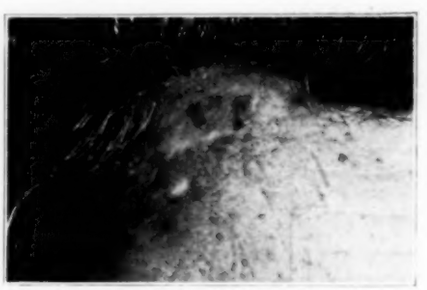

Fig. 48.—Same as Figure 47. Patient received three unfiltered, intensive treatments totaling H 14. A few months later there was a relapse. Two filtered treatments totaling H 24 were then given. No relapse since November, 1914.

Relapses may occur, but not as a rule. Personally I have not had a single recurrence where the patient remained under treatment until the lesion completely disappeared.

Fig. 53.—Mycosis fungoides.

Fig. 54.—Same as Figure 53 after one mildly intensive treatment. The patient was first "immunized" by fractional doses applied to lesions on other parts of the body.

Tuberculous adenitis, with or without scrofuloderma, yields good results with the intensive treatment. Here my best results have been obtained by the use of a "hard" ray filtered through 3 mm. of aluminium, the dose ranging from 4 to 8 H; several treatments are necessary as a rule.

Tuberculosis verrucosa cutis, if the warty excrescence is first removed by the curet, will yield to a single intensive application. Otherwise several treatments may be necessary. The cure seems to be permanent.

Lupus Erythematosus.—Although records of cures of lupus erythematosus by means of Roentgen radiation are found in the literature, I have failed to cure a single instance of the disease by this method and therefore I prefer other measures, such as the solid carbon dioxid. It seems unwise, in lupus erythematosus and atrophic lupus vulgaris, to apply enough ray to permanently injure the skin, because these diseases seem to invite the development of malignant epithelioma and excessive Roentgen-ray dosage simply adds fuel to the fire.

Epithelioma.—The ulcerative type of basal-cell epithelioma (rodent ulcer) can be completely cured with one erythema dose. The nodular type may require two or three treatments unless the lesion is first curetted. Recurrences are uncommon, there is no pain, no scarring and no interference with business, so that it would seem that the Roentgen ray might be considered the method of election in the treatment of this affection. There are cases, however, that will not yield to the Roentgen ray, but, fortunately, such instances are extremely uncommon. The most rebellious examples that I have encountered are those in which the lesion had been treated by obsolete Roentgen-ray methods. A few years ago it was not uncommon to hear of an epithelioma receiving as many as 150 Roentgen-ray treatments—small, oft-repeated, stimulating doses. These lesions improved to a certain extent and then became very recalcitrant to all forms of treatment; or if they healed under the influence of the Roentgen ray they were very likely to recur. The explanation is possibly that so many stimulating doses taught the tissues to resist the beneficial action of the Roentgen ray; again, it is possible that so much ray produced an analogous effect to that seen on the hands of the pioneers in Roentgen-ray work. It would, therefore, seem advisable to employ intensive treatment and to obtain the maximum benefit with the minimum amount of ray.

I have had occasion to treat a number of benign epitheliomas that had been previously rayed by obsolete methods, and while most of them have responded to the intensive technic, some have remained unaffected and many of them have recurred within a year or

Fig. 61.—Chelitis glandularis of long standing, with a few herpetic vesicles on chin and right commissure.

Fig. 62.—Same as Figure 61 after one intensive application (H 4, B 9).

two. In general it may be said that the longer the lapse of time subsequent to former Roentgen-ray treatment, the greater is the chance of recovery under the intensive technic.

In squamous-cell (malignant) epithelioma of the skin the Roentgen ray is uncertain, although very brilliant results are occasionally obtained. Personally I prefer to elicit surgical aid in these instances and

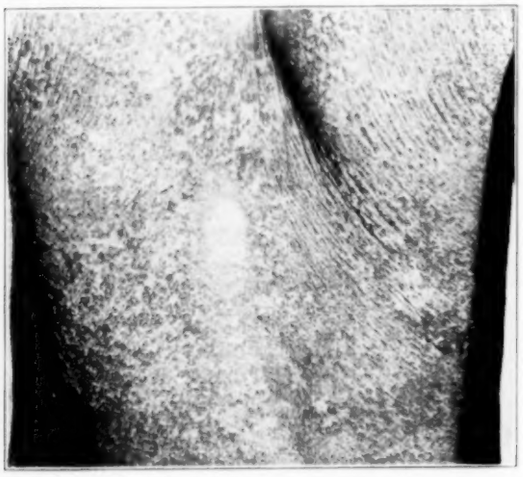

Fig. 63.—Ichthyotic skin.

employ the ray intensively as a prophylactic, unless, indeed, the case is inoperable. The fact that the Roentgen ray will occasionally cure malignant epithelioma warrants its use in inoperable cases, and as a prophylactic in postoperative cases. In such instances it is wise, also, intensively to treat the neighboring lymphatics, even when these are not palpable.

Fig. 64.—Same as Figure 63 after one intensive treatment.

The same remarks may be repeated in discussing epithelioma of the lips, tongue and other mucous surfaces. I have cured (temporarily at least) a number of epitheliomas of the lip, but they have been superficial and the glands were not involved. At the present moment it would seem advisable to refer lip cases to the surgeon and rely on the Roentgen ray as a prophylactic, unless the disease is detected in the earliest stages or unless the case is for any reason inoperable. In regard to epithelioma of the tongue, buccal mucosa and glans penis, I refer all such cases to the surgeon as soon as the diagnosis is established.

Paget's disease, especially if diagnosed early, will yield to a single erythema dose. The preepitheliomatous lesions (keratoses) occurring in xeroderma pigmentosum can be removed by intensive Roentgen-ray radiation. This is interesting, as such lesions are supposed to be caused by the action of direct or indirect sunlight on a peculiarly susceptible skin. In this connection, too, the keratoses produced by the Roentgen ray can be cured by this same agent, especially if employed intensively, and especially, also, if the parts have not been exposed to the Roentgen ray for several years. Senile keratoses (senile verruca, seborrheic warts), which are forerunners of epithelioma, readily respond to a single erythema or even a suberythema application of the Roentgen ray. If there is much thickening of the horny layer, it is advisable to use the curet in order to insure recovery with one application of the ray.

RADIANT ENERGY IN THE TREATMENT OF DISEASES OF THE SKIN *

EVERETT S. LAIN, M.D.
OKLAHOMA CITY

In the discussion of this subject, I am presuming that with the present-day knowledge of radiant energy and the physical laws which govern it, whether this energy emanates from the sun or an electrical source, no progressive medical man can longer deny that radiotherapy has come to stay. Even the shrewd merchant in the commercial field has perceived its popularity and has named his goods, "Radium Diamonds," "Violet-Ray Lotions," "X-Ray Corn Solvents," etc.

Radiotherapy is no longer an experiment, and the proved field is becoming more and more widened until all departments of medicine have had to give it consideration.

Surgical diagnosis without the aid of the Roentgen ray is an antiquated art. Medical diagnosis and treatment with some form of this energy has become a matter of daily routine, though perhaps to the dermatologist these agents lend their greatest therapeutic aid.

The forms and sources of radiant energies which are being used by dermatologists are so numerous that I shall be able, within one paper, to mention but few. Of these perhaps the most commonly used are the Finsen light, violet ray, high-tension current effluvia (commonly though incorrectly called the violet ray), radium, and the Roentgen or x-ray.

I have not had personal experience with the application of the Finsen ray or with a strong potency of radium; therefore I shall leave the discussion of these two agents to others who have had sufficient experience and await their tabulated results. So far, however, as I have been able to observe recorded cases, I am convinced that the physiologic and histologic effects of both of these agents are not unlike those of the Roentgen ray, except that each differs from the other in potency and in the periods of time required to produce like changes in cellular life. In fact, the effects of the Finsen ray, violet ray, high-tension effluvia,

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

radium, and Roentgen ray, when applied to the skin for different periods of time, give reactions which are so nearly alike that it has seemed convenient to divide these effects into the same divisions which have previously been applied to the effects of the Roentgen ray alone:

1. When one of these agents is applied directly or in near contact to the skin for a period, we note, when the reaction becomes visible, quoting from Tousey, "a stimulation of the sympathetic nerves, a pouring out of the blood plasma, increased oxidation, and metabolism."

2. When a greater degree or longer period of application has been given, we note an increase of each of the first-named changes, with the additional increase of hyperemia, elevation of temperature, and a beginning of cell degeneration with a slight exfoliation of the superficial layers of the skin.

3. If the application is continued longer or in a still more intense degree, we note an exaggeration of all the second-degree symptoms, with the beginning of an inflammation in the delicate lining membranes of both the blood and lymph channels, producing an obliterating endarteritis and lymph block throughout the area receiving the direct rays. This may be of such degree as to cause a complete death and slough of the tissue. These degrees of reaction more correctly describe those which are produced by radium, violet ray, and Roentgen ray.

The reactions, following the application of high-frequency effluvia (that is, the violet-colored light with its shower of sparks produced by the passing of a high-tension current through a glass vacuum electrode), of fulguration (the hot spark of the same current when allowed to leap from a pointed electrode), and of diathermy (the intense heat of the tissues which is produced by the double or bipolar high-tension current placed in contact with the surface of the lesion on opposite sides) are similar to the agents named above, though they produce their reactions *immediately* following their application.

It is a demonstrable fact that cellular life is stimulated and metabolism increased within the first degrees of reaction, while within the second and beginning third degrees cell life undergoes degenerative changes, the pathologic cells degenerating at an earlier period and with more rapidity than the normal cells. To this law we owe the successes accomplished in the treatment of malignant and other pathologic growths; also, may I suggest, in the first degree or its effects is found, no doubt, the secret of many of our failures.

Then, as already implied, I believe that whenever we have more carefully studied the histopathology of diseases to be treated, and acquired a more accurate technic of application, we shall more nearly agree as to the value of these energies and have our efforts more commonly crowned with success in the treatment of a certain class of superficial malignancies and diseases of the skin.

I have often longed for the time when skin diseases might possibly be classified with reference to their etiology, histopathology, etc., so that we might study these methods of treatment more systematically and be able to present them to medical students in a more intelligent manner. I have in recent months undertaken such a classification, and though as yet it is tentative, it coincides with my experience in the application of electrotherapeutic methods. These conclusions are based on an experience of nearly thirteen years with the use of one or more forms of these energies, the last seven years being devoted exclusively to dermatology and electrotherapy.

Under the first division or class of skin diseases, I have placed those which have not been favorably influenced by the application of radiotherapy, except in the region of its local application. These diseases constitute a class whose etiology is yet unknown, though they are supposed to have their origin in some toxic product which has been absorbed or has failed to be eliminated by the internal organs, whose function it is to act on them, such as dermatitis herpetiformis, the different varieties of erythemas, the lichens, psoriasis, etc. By way of parenthesis permit me to say that since hearing Dr. Rosenow's report on his discoveries in erythema nodosum, I have been making radiograms of the teeth of a number of these patients and have collected strong evidence tending toward a conclusion of focal infections as a possible etiology in many of this class of diseases; but I am not yet in a position to report on these cases.

Under a second division, I have named a class of diseases which appear to be an inexplicable derangement or condition of the superficial glands, nerves, or of metabolism within the cells, no doubt internal or central in origin, which are favorably influenced by some form of radiotherapy, though with few exceptions they are best relieved by medicinal means combined with some form of radiant energy. Among there are such as: hyperhidrosis, pompholyx, pruritus, prurigo, herpes zoster, most forms of eczema, etc.

In a third class I place most of those diseases which are superficial in origin and are due to local infection of a micro-organism of some variety, such as acne vulgaris, staphylococcic and streptococcic infections, erysipelas, and practically all the mycoid and fungoid infections of the skin, including the tineas, blastomycosis, sporotrichosis, etc. A large percentage of this class will yield nicely to one or more forms of the radiant energies without the use of medicinal applications, though in most of these cases I would prefer to use a combination of medicinal treatment and radiotherapy.

In a fourth class I shall place practically all lesions or diseases which are characterized by an increased development of pathologic cells, whether of a benign or a malignant nature, such as fibroma molluscum, rhinophyma, keloids, superficially located epitheliomas, etc.

I believe that most of the above-named classes of lesions are amenable to some form of radiotherapy alone, if this is applied with intelligent and cautious technic in the earliest stages of the development of the lesion.

Briefly reviewing, then, and speaking more specifically with reference to a few of the above-named classifications, I believe that an attempt to treat a class of skin diseases which are evidently systemic in origin, whether of a toxic or infectious nature, by radiotherapy locally applied, may give some temporary relief, though it is like an attempt to destroy the life of a serpent by beginning at its tail. These agents, therefore, can be recommended only as one of the aids of dermatologic therapy. I have found the Roentgen ray in the treatment of hyperhidrosis, dyshidrosis and several forms of eczema an almost indispensable aid if pushed to a point of first reaction in the first series

of treatments, though without other or medicinal treatments these eruptions are prone to recur. The Roentgen ray has given me valuable aid in the treatment of all forms of pruritus and in one case of true prurigo I have been entirely successful.

Perhaps the most remarkable effect observed on any disease under the second classification is the almost certain relief from the lancinating and burning pains, so characteristic in herpes zoster, which occurs when the high-frequency effluvia is vigorously applied over the trunk and superficial nerve supply of the parts affected. This relief sometimes comes immediately following only one application.

In view of the clinical reports of the treatment of tineas with the Roentgen ray by Sabouraud several years past, it is unnecessary to comment on my own verifications of it, since most of you have doubtless experienced the same gratifying results.

Notwithstanding the fact that the treatment of acne vulgaris and acne rosacea by Roentgen ray has been disparaged by many dermatologists as dangerous, and giving unsatisfactory sequelae, etc., I have continued to use this most valuable aid as a routine for ten years in the treatment of these diseases and in not a single case as yet have I had cause for regrets.

Erysipelas has long been known as a local and superficial infection with systemic products. With this in mind I began, in 1910, to treat the early manifestations of this disease by a single series of Roentgen-ray exposures and after treating a number of cases, beginning at an early stage of the disease, I am fully convinced that it is a most valuable aid. Indeed, in some of these cases, I noted after either a single or a second exposure an immediate flushing of temperature, which, however, subsided within from two to six hours, with an abating of all symptoms and an uneventful recovery.

Of the fourth classification, perhaps the most uncertain results I have obtained have been in the treatment of the different varieties of sarcomas by radiotherapy. This class of malignant growths has not proved a very favorable one to treat by radiotherapy alone. No doubt this is due to their channels of absorption, the blood vessels, which are not rapidly and quickly blocked without an unusually strong treatment. With this exception, I have found the treating of this class of lesions by fulguration, diathermy, or Roentgen ray one of the most successful and satisfactory phases of all my work, and furnishing an unbounded field for dermatologic practice.

The treatment of superficial epitheliomas before the stage of well-developed metastasis has been a large part of my practice and I cannot refrain from reporting a few of the totals and percentages briefly gleaned from my records of the past few years.

For these cases and for most valuable assistance rendered in the treatment of them I am much indebted to my many professional friends of Oklahoma and other states, and to my associate in practice for the past six years, Dr. M. M. Roland. The length of this paper will not permit more than a statement of totals, without comment. A number of years have elapsed since treating my first case of epithelioma with the Roentgen ray, and it is therefore impossible at this time to trace the after-history of all of my early cases. Therefore, taking our records consecutively for the last seven years, we have been able to trace 177 cases of epitheliomas of different varieties and located superficially on various parts of the body. In a large number of these cases the diagnosis was verified both microscopically and clinically. From this number we have to deduct fifteen cases in which the patients have later died of the same disease or have had a recurrence, and we count them as Roentgen-ray failures. This leaves 162, or 91 per cent., in which the patients are now living with no evidences of return.

We have learned that epitheliomas located on the hands and on the alae of the nose, just at its fold on the cheek, perhaps owing to a greater mobility and irritation, are of an uncommonly stubborn nature, and five of our failures have been in such cases. If therefore, we had subtracted the cases at these particular locations, we should have 94 per cent. living instead of 91 per cent. of those treated by Roentgen ray alone on selected locations.

And now, you may say, what of the much-discussed location of epitheliomas on the lips? We have traced twenty-seven consecutive patients who were treated by the Roentgen ray alone during the past seven years. Of this number, twenty-two, or 81 per cent., are still living without recurrence. Some of these were treated five and some seven years ago, and we have no doubts that a majority of these are entirely well.

It may be said that no such record can be made except in select cases. This I admit, although in a number of these cases the lesions were well-developed indurated growths as large as a hazelnut or larger, and one of these cases had perceptible evidence of metastasis in the submaxillary region. Most of them, however, were those, as above mentioned, in which treatment was begun before evidence of metastasis, and had not more than one third of their surface covered by the mucous membrane.

In conclusion, then, I shall say that my experience with the use of radiotherapeutic agents in skin diseases has taught me:

1. It is necessary to look carefully into the pathology and etiology of a disease before attempting to treat by one of these methods.

2. These agents are valuable aids in the treating of a certain class of skin diseases when combined with medicinal and other methods.

3. There is a class of skin diseases, chiefly local in origin, which can be treated by radiotherapy more successfully than by any other method.

4. While the treatment of malignant lesions with these energies is much abused by the unskilled, yet we are coming to recognize that radium and the Roentgen ray, when properly administered in a selected class of cases, have proved themselves superior to all other methods which have been used to the present time.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MAC KEE AND LAIN

DR. RICHARD L. SUTTON, Kansas City, Mo.: The results attained by these two speakers have done much to convince me of the value of the massive dosage method. In order to avoid disastrous results, however, great care and a considerable degree of skill are necessary. I well recall a recent instance in the practice of a colleague in which this method was employed in the treatment of a case of ringworm of the scalp. A severe burn resulted, and extensive skin grafting was required to correct the ensuing deformity. With regard to the prognosis in cancer of the skin, I have found carcinomas involving the mucous membranes, the lower lip, the cartilage of the ear, the parotid region, and the backs of the hands to be the most dangerous.

DR. ERNEST DWIGHT CHIPMAN, San Francisco: I remember reading the discussion of Roentgen-ray treatment at a meeting in New York in which some one expressed the view that in New York the Roentgen ray was no longer seriously regarded as a therapeutic agent in dermatology. It seemed to imply that we poor souls in the provinces who still use it are hopelessly behind the times. I am glad Dr. MacKee's paper does not confirm this notion. Dr. MacKee expresses dissatisfaction with small doses and we all must have corroborated that idea in our own experiences. I have noted not only in epitheliomas but also, and particularly, in psoriasis, that while one gets a temporary recovery, recurrence takes place, and the recurrence is more difficult to get rid of than the original trouble. I may have misunderstood Dr. Lain in his reference to erysipelas; I gathered from his paper that the Roentgen ray was a parasiticide, which I have never believed and which I would be glad to hear him explain.

DR. DOUGLASS W. MONTGOMERY, San Francisco: In epithelioma I like to curet out the neoplasm to get down to the base; and I do that because I believe the Roentgen rays do not act very deeply. Furthermore, there is no object in sparing the diseased tissue. After scraping away the diseased tissue I burn the base with a good penetrating caustic. This serves two purposes; it eliminates any cancerous tissue that may still remain, and it seals the wound against infection. This gives a cleared base on which the Roentgen rays can best act effectively. Dr. MacKee mentioned that in the previous discussion.

Dr. MacKee mentioned a most interesting and difficult matter when he spoke of warts under the nails. We have had now for a long time a girl under our charge with sweating palms and with most persistently recurring warts of the volar surfaces of the fingers. The sweating persisted and the warts recurred even after the employment of Roentgen rays. Some assert that flat warts, verrucae planae, may be removed by Roentgen rays, but I do not see why Roentgen rays should be used on flat warts, and I think it is better to treat them with the curet and strong acetic acid.

DR. H. H. HAZEN, Washington, D. C.: During the past winter I have been doing Roentgen-ray work as done by Dr. MacKee, and I want to say it has been the biggest gain in therapy that I know. There is no more comparison between the old and the new methods of using the Roentgen ray than between any other widely separated things.

It seems to me it might be theoretically dangerous to curet a cancer before using the Roentgen ray. I think the best thing to do when you want to get rid of the surface is to use the electric cautery. That opens up no channels.

I was interested in Dr. Lain's statement that he cured 90 or 91 per cent. in a group of epithelioma. Were those cases followed up by Dr. Lain for a period of five years? We had no statistics over this five-year period in Roentgen-ray work; but I hope that Dr. MacKee and Dr. Lain and others using the Roentgen ray will publish their results. We need in the worst way those results, in order to compare them with results obtained by surgical procedures.

DR. HARRY E. ALDERSON, San Francisco: The reason we hear of different results from the use of Roentgen rays in the hands of different men is that there is no common standard of measurement of the dosage in use. I think very often great chances are taken by individuals in attempting to apply the Roentgen ray without using any of the known means of measuring the doses. Should burns result from such unmeasured doses there is no doubt in my mind that legal action could be successfully conducted against the operator. The fact that half-way measures in the treatment of epitheliomas are extremely dangerous cannot be too strongly emphasized. Either the knife should be used thoroughly or the ray intensively, or both should be used. We prefer the knife and afterward the ray. Most of the cases of extensive epitheliomas that we see are in patients who have had the early lesions treated with the various "half-way measures" advocated from time to time.

DR. GEORGE M. MACKEE, New York: I prefer to curet the nodular type of basal cell epithelioma. If this is done a cure can usually be effected as a result of a single erythematous dose of the Roentgen ray. I do not curet the squamous cell type of epithelioma.

Regarding the parasitic or germicidal action of the Roentgen ray, it is the general consensus of opinion that it has none. We know, for instance, that a very small amount of Roentgen ray will sometimes cure sycosis vulgaris, but this prompt action is probably due to a modification of the soil rather than to direct action on the bacteria.

DR. EVERETT S. LAIN, Oklahoma City: Dr. MacKee answered Dr. Chipman's question, only I wish to add that by blood count following the Roentgen-ray treatment, that is, a count within from thirty minutes to two hours, you will note in most treatments, quite remarkable changes in the count of the red and white corpuscles. You usually have an increase in the leukocytes. There is no doubt to one who has made the test, that indirectly the Roentgen ray does serve as a parasiticide. Dr. Hazen asked how long we followed these cases. I said in my paper that they covered seven years. I might have included in that nearly 200 cases that antedated that period. These cases I did not have time to trace after I decided to write this paper. About 20 per cent. of the reported cases have been treated in the past two years. About 60 per cent. prior to that time. According to former statements of surgeons, that is a good test of a cure. We believe these patients are well. However, we can allow a reduction of the percentages and yet have a fair percentage of recovery.

DR. H. H. HAZEN: What percentage of five-year cures have you had?

DR. EVERETT S. LAIN: I cannot give the figures without looking up my records, but making a guess, I should say not less than 35 per cent., excepting those on the hands, which as I said have been uncertain.

MODERN TREATMENT OF FRACTURES OF THE LONG BONES FROM THE ORTHOPEDIC POINT OF VIEW

WITH CLINICAL OBSERVATIONS AND CONCLUSIONS*

J. W. COKENOWER, M.D.
DES MOINES, IOWA

The treatment of fractures of the long bones has been given much attention during the past few years, by the general and orthopedic surgeon, relative to the closed and open methods and the use of nails, wire, plates and bone grafts. No matter how scientific and modern the work, and how successful the results obtained, it is absolutely necessary that the bones be immobilized and held in position by some kind of mechanical appliance whether the treatment be open or closed, or both. As orthopedic surgeons give more attention to the latter than surgeons do, it would be but natural to conclude they were as able, if not more so, to do such work with better clinical functional results.

The direct fixation of compound fractures, when the bones are exposed and cannot be held in position by splints, has come into general use by surgeons of large experience, but when the matter of simple fractures is presented for consideration, there is a lack of uniform opinion, whether the fixation shall be by open or closed method.

The difficulty of the open method in many cases, the unsatisfactory adjustment of fractured bones by manipulation and the uncertainty of fixing and maintaining the broken ends in perfect alignment, prompts one to decide in favor of the open method, augmented by such orthopedic mechanical devices as will positively hold in perfect position the fractured bones.

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

That this is the best treatment no one will doubt, when done by a good surgeon with operative and mechanical skill backed up by perfect asepsis, and any lack of the latter is more fatal to perfect union than a similar error in technic in abdominal surgery; for in this the lymphatics are less able to cope with ordinary infections, than in the peritoneal cavity, and in no other domain in surgery are aseptic errors so often punished by failure.

It is necessary to divide our simple fracture cases into two groups: those that can be treated in a hospital and those that can not. The greater number of cases have always been treated by the general practitioner, and his functional results are usually good and satisfactory to the patient, even though a roentgenogram may show an imperfect alignment and defective judgment, hence, the general or orthopedic surgeon can never hope to control the exclusive management of fractures and the open treatment can never become universal.

It would not be advisable to do an open operation in all simple fractures because many of them can be perfectly adjusted by manipulation, under anesthesia, and accurately held in position by proper retentive dressings. A Colles' fracture of the wrist can nearly always be reduced if the fragments, which are often impacted, are unlocked by increasing the deformity before attempting reduction. A Pott's fracture of the ankle joint will often be set with a snap if traction is made in the line of the deformity, and many transverse fractures of the femur show little tendency to displacement when proper mechanical appliances are used.

Therefore the most enterprising surgeon would hardly be justified in stating that all simple fractures should be treated by the open method, even in the face of Sir Arbuthnot Lane's statements that they should, and he uses in all his open operations the same external retentive and fixation appliances to reinforce the strength of his plates, screws and clips, that are used in the nonopen treatment.

The fixation appliances used in the open method can be depended on only for a few days, because of the pathologic softening of bony structure surrounding the peg, screw or wire, and the bones become loose unless augmented by a carefully applied external splint. This fact of softening has been found in cases in which the open method has been resorted to in from ten days to six weeks after the fracture and the ends of the bones were too soft to hold the pegs or screws. This softening, on investigation by the Roentgen ray, at different times proved to be a pathologic one, which accounts for the many cases of nonunion of bones that had been accurately adjusted and properly retained.

Hence, if it should be found that reduction cannot be accomplished in the usual way, or that coaptation cannot be maintained, the open or operative method should at once be resorted to before the bones have undergone reparative softening.

The fact that screws and wires do not maintain and hold until bony union is complete has been shown in all cases in which it became necessary, early or late, to remove them, either from infection or because of detachment because of softening bony structure.

I have used the bone-graft treatment of Drs. Murphy and Albee and obtained good results in all cases of nonunion wherein such treatment has been used, especially when the inlay of grafts is cut and inlaid in such a manner that each stratum of periosteum and bone of the fracture meet and approximate a like stratum of the graft introduced. This can usually be done, after which not only will union occur, but the individual cells of both graft and bone will be stimulated, and overgrowth and callus formed with strength equal to, or exceeding that normal to the part.

It has been found that when an open operation was attempted in from two to four weeks after injury, in cases of oblique and in some cases of transverse fracture of the femur, leg, arm and forearm, with tendency to overlapping, that it was difficult and sometimes impossible to overcome the muscular contraction. When this occurs an open operation should be done, as soon as the patient can be brought into favorable environment, because this is the class of cases that give most trouble and this condition is the cause of nonunion.

It has been my custom to give an anesthetic in all cases in which manipulation is too painful or muscular rigidity is marked and endeavor to secure crepitus, if possible, that I may be more certain that no muscle, fascia, or loose fragment of bone is interposed between the fractured ends of the bone. While it may be true that nonunion is often due to defective innervation, diseases of the bone, syphilis, or excessive rarefaction, we must admit that a defective relation of the fragments is the prime factor to be considered. However, an entirely different condition may produce nonunion because of a lack of proliferation of soft and bony cell tissue.

I have seen several cases in healthy and vigorous young persons in which there existed little or no displacement, and in which immobilization was easy and complete, that ended in nonunion, due, no doubt, to a restricted local reaction and defective hyperemia with insufficient nutritive and reparative local reaction, which easily yielded to vigorous friction of the ends of the bones.

The fear of converting a simple and noninfected fracture into an open and possibly an infected one was so great that, rather than take the chance of creating an infected compound fracture, one was willing to take some chance of obtaining a fairly good functional result, even though the Roentgen ray might show imperfect apposition. Hence, we are no longer able to cover up our mistakes because the Roentgen ray will show them. My experience has been that when the Roentgen ray shows that the bones were in proper apposition in the beginning and union complete in the end of treatment, and that no mistake has been made, no matter how seemingly unsatisfactory the results were before this knowledge was obtained, the psychologic as well as the physiologic functions always improved afterward.

I have used the two extremes in the open and closed methods of treating fractures, but my functional results were not always satisfactory, which prompted me to use the medium and extremes conservatively. Since doing this not only were my functional results more satisfactory, but the general contour, in the normal axis of the limb, was better, which prompted the following conclusions:

1. All fractures that can be adjusted manually and can be fixed in a position that will insure a good functional result, even though the Roentgen ray shows a lack of perfect end-to-end approximation, are to be treated by the closed method.

2. In all fractures with marked deformity, such as overlapping, angulation, lack of contact of fractured surfaces, evidence of soft or detached osseous tissue between the ends of the bones, and especially compound fractures when it is apparent that union will not take place, the open method is invariably used.

3. The open method being used, I prefer the Lane plates, when sufficient smooth bone surface for their attachment can be obtained. When this cannot be done, prepare the ends of the bones for good and satisfactory apposition. If not sufficiently jagged make at least one lateral and one anteroposterior dovetail in the ends of the bones to prevent them from displacement, after which wire, and if proper retentive appliances be used good results should be expected.

4. The bone-graft inlay should always be used in nonunion, especially when the pathologic softening of the ends of the bones exists augmented by infection or misplacement of the ends, including soft tissue between them, but not in simple fresh fracture or fractures, to which the Lane plate will be better adapted.

5. The mechanical immobilizing support must be satisfactory, otherwise previous preparation, no matter how good, will be a failure. No rule can be made for the use of plaster of Paris and splints, except that the former should not be used when any swelling is present and should never be left on too long, because atrophy of the soft tissue may do the immobilization harm; but splints, when properly made and adjusted, are always satisfactory.

6. The Roentgen ray should be employed early whenever possible, to aid in a proper estimation of the extent and location of the fracture, to determine whether the open or closed method should be used, and if the former, it should be done promptly. The Roentgen ray should again be used, when the patient is discharged, for anatomic and functional reasons.

Utica Block.

ABSTRACT OF DISCUSSION

DR. ROLAND HAMMOND, Providence, R. I.: I agree with most of what Dr. Cokenower said. I believe that as orthopedic surgeons we have a great opportunity in the treatment of fractures. The orthopedic mind naturally inclines to the solution of mechanical problems such as are involved in the treatment of a fracture. There are three requisites necessary in the treatment of a fracture: (1) a complete Roentgen-ray study of the fracture before and after reduction; (2) the use of anesthesia in practically every case, and (3) at times a consultation. We can no longer treat a fracture according to textbook methods. Every case is a separate study, according to the conditions as shown by the Roentgen ray. In treating a fracture I always make a roentgenogram so as to show what the condition is. Then under ether I reduce the fracture. Take a plate while the patient is still under ether, and if it shows proper reduction, put the fracture up. If not, I keep on until I have proved that the fracture can be reduced by further manipulation, or that it cannot be reduced and may require an open operation. I think a good many of the fractures of the long bones, especially of the femur, are not properly reduced, because countertraction is overlooked. Traction is employed, but countertraction is not, and in setting a fracture of the leg, especially of the femur or of both bones, if the limb is put on to a frame where traction can be applied with a windlass, with counterpull in the perineum, you can put on the plaster or whatever apparatus you choose to employ, without depending on an assistant to hold the leg. The windlass will hold the part firmly so that the plaster can be properly applied. I disagree with Dr. Cokenower as to the use of Lane plates. I believe in most cases they can be dispensed with, and if any form of fixation is to be used, it is much better to employ the bone graft. I think with proper external fixation most fractures can be held, but the metallic internal splint has already given too much trouble in this country to warrant its further use, except in very exceptional circumstances.

DR. ROLAND MEISENBACH, Buffalo: I wish to bring before the section's notice a point which I have observed in connection with fresh fractures and anesthetics, namely, the fact that with nitrous oxid and oxygen as an anesthetic, one does not get complete relaxation; that is, the muscular tone remains fairly tense. This is of great value in setting a fresh fracture, either with or without incision; namely, the semicontracted muscles tend to hold the fragments in place and act as a lock, as it were; whereas, if an ether anesthetic is given, complete relaxation will often tend to a flail-like condition at the point of fracture. If you can reduce your fracture without complete relaxation, in many places you can approximate it and it will hold. I think this also accounts for the fact that many fractures, especially of the wrists, are successfully reduced without an anesthetic.

DR. J. W. COKENOWER, Des Moines, Iowa: I cannot agree with Dr. Hammond that it is necessary to cut down and use a bone graft in a healthy bone or fresh fracture and one that can be put in apposition. It certainly ought to be held in position by the proper mechanical appliances; so that bone grafts as well as Lane splints are the proper things only in properly selected cases. With the attention that orthopedic surgeons of this country have given to bone surgery, they are absolutely and justly entitled to treat fresh fractures, and in doing so there will be less trouble afterward and much less litigation. I believe that the time will come when a majority of fresh fractures will be referred to orthopedic surgeons, because in the end, results are to be considered and the public is the umpire of our work. I think they will decide in our favor, because we are able to do the work and do it right.

PAINFUL FEET

CAUSES AND TREATMENT *

HENRY W. FRAUENTHAL, A.C., M.D.
Fellow of the American College of Surgeons; Physician and Surgeon-in-Chief, Hospital for Deformities and Joint Diseases
NEW YORK

In discussing the causes of painful feet, I have selected those forms which numerically are most common. As, in the majority of joint conditions, the advice of the orthopedist is sought after the condition becomes chronic, so, too, in painful conditions of the foot, we are not applied to for advice until the condition has gone on for some time and becomes so painful that locomotion is too difficult to be tolerated.

I wish to call attention to the great frequency of foot infections secondary to focal infections in other parts of the body, as in the teeth, gums, mouth, throat and nose; also after grip, pneumonia, typhoid fever, etc., as I have found these to be the cause of the largest percentage of painful feet in adults and children, in the cases examined at the Hospital for Deformities and Joint Diseases during the past two years.

This idea can best be presented by quoting from the recent article by Dr. Lovett[1] of Boston. In his report of 800 nurses with painful and flat feet in the Massachusetts General Hospital, Dr. Lovett states that "the onset was frequently after grippe, tonsillitis, or acute illness of one sort or another." Now, when

* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Lovett, R. W.: The Superstition of Flat Foot, THE JOURNAL A. M. A., April 10, 1915, p. 1208.

infection of the feet which involves all the soft tissues, muscles, tendons, bursa, ligaments, etc., results the ligaments sustaining the arch become relaxed, and unless some fixation support is used, there will be a stretching of the ligaments and breaking down of the arch of the foot, which may or may not continue to be painful.

A similar process is overlooked in children after tonsillitis, measles, scarlet fever, etc. I hope that in the future, when secondary results are looked for in the heart, physicians will investigate the muscles supporting the foot, and when children complain of later rheumatic pains in the foot and legs, proper preventive measures can be used to avoid the later chronic foot trouble.

Our present efforts must be to seek the primary focus of infection and aim at its eradication, after measures for the fixation of the foot and temporary support of the arch have relieved the symptoms and been productive of partial cure.

To treat this condition properly, a plaster cast supporting the arch and retaining the foot in a fixed position is the most perfect splint.

The strapping after the method of Ochsner[2] is also an efficient means of fixing the foot and sustaining the arch.

The Whitman[3] plate, as a support and fixation, has its value. This is also true of other arch supporters. But the too long continued fixation by metal arch supporters results in atrophy of the interosseous muscles, fat, etc., owing to their nonuse. The hardness of the metal is objectionable, as it develops callus of the skin and periostitis of the bones.

When the inflamed foot is neglected or not properly treated, the inflamed agglutinated surfaces fuse together, and we have the fixed or static foot, in which there is no motion between the small bones. This type of foot is most unsatisfactory to treat. I have obtained the best results by heating them in dry air from 250 to 400 F. by means of a Tyrnauer electric baker, and then manipulating and massaging them. I will cite a few cases showing types of focal infections:

Case 1.—*Infectious arthritis from infection of gums.*—Mr. F. H., a detective, referred by Dr. Austin Holles, New York, applied at the Hospital for Deformities and Joint Diseases complaining of flat and painful feet. For two years previous, he had been treated for his painful feet by various types of foot plates given him at the advice of different physicians. In the past three months, his pain had become so acute that it was impossible for him to get about with the aid of a cane, and he was incapacitated from attending to his work. The appearance of his feet made one suspicious of an infectious arthritis. The Wassermann test for syphilis was negative; the agglutination test for gonorrhea was also negative. An attempt to determine the focus of infection revealed infectious pyorrhea of a number of the roots of the teeth. As this resembled the type of case in which symptoms have been benefited and relieved by sterilization of the gums and cleaning up of the deposits in the roots of the teeth, this method of treatment was pursued in this case.

Although the arch of the foot had decidedly broken down, and the Roentgen ray showed evidence of the infectious process, after two weeks' treatment the patient's symptoms of pain had all disappeared, and for the past four months he has been able to attend to his business, and is free from pain; he has also discarded his arch supporters and his cane.

This is an illustrative case of many which have been relieved of all the painful symptoms after the sterilization of pyorrhea infection. I hope that infections of the teeth will be given consideration in future examinations of painful feet.

Case 2.—*Infectious arthritis of the feet from infection of tonsils.*—Mr. M. S., aged 28, bookkeeper, with no venereal history, does not drink spirituous liquors; smokes one dozen cigarettes daily. About six weeks previously, patient had an attack of acute tonsillitis; about two weeks following, the feet were painful and swollen; a few days later, the swelling subsided but the pain continued and grew worse. Owing to the pain and difficulty in walking, he was referred to the Hospital for Deformities and Joint Diseases by his family physician. Examination revealed the tonsils inflamed and enlarged, and the patient was referred to Dr. Julius Auerbach, the throat specialist of the institution, who coincided in the opinion that the throat was undoubtedly one of the sources of infection. The patient was then referred back to his family physician with our opinion and the advice that the tonsils be removed. This was done at the hospital by Dr. Auerbach, March 4, 1915. For the next two days, there was increased pain and tenderness in the feet which gradually subsided, and for the past three months the patient has remained well and is free from all pain. The microscopic examination of the tonsil shows streptococci.

INFECTIOUS ARTHRITIS OF THE FEET FROM NONGONORRHEAL LEUKORRHEA

There is a special class of infectious feet found in married women between the ages of 20 and 40 that are of great interest. Patients are negative to Wassermann and Noguchi tests and also negative for the agglutination fixation test. There is a vaginal discharge and often laceration of the cervix for lymphatic absorbtion. We fail to find gonococci in repeated smears.

The feet are slightly swollen, tender and painful to walk on. I have been able to cure a number of these cases by antiseptic douches of mercuric chlorid and iodin solutions.

The following case is illustrative:

Case 3.—Mrs. B., aged 32, married at the age of 22, had three children and no miscarriages. She had some vaginal discharge following birth of second child five years ago, continued after birth of last child two and a half years ago; no increased temperature or illness after any of her confinements. For the past two years she has worn arch supporters for painful feet, with little relief of symptoms. When patient was first examined by me, Nov. 18, 1914, her feet were somewhat swollen and very tender when walking. There was a suspicion of neisserian infection from their appearance; several examinations were made of the discharge, but no gonococci found. Her husband denied venereal history; an examination of his urine and prostatic secretion was also negative. Patient received vaginal irrigation with 1:5,000 mercuric chlorid solution three times a day. In five days the symptoms in the feet began to improve and in two weeks had all disappeared. The patient has gone about with ordinary shoes without arch supporters and has remained well ever since.

This is one of a class of cases of nongonorrheal vaginal infection.

OVERTAXATION AND NONUSE OF MUSCLES

In addition to the class of feet that are weakened by infectious process, we have a second class that occurs in policemen, motormen, salesmen, pedlers, etc., who, owing to their standing for long hours, overtax the muscles that support their arches.

A similar condition is often brought about by the sedentary occupation of men and women, and by the

2. Ochsner, E. H.: Potential and Acquired Static Flat Foot, The Journal A. M. A., Nov. 23, 1907, p. 1742.
3. Whitman: Med. Rec., New York, Aug. 13, 1907.

nonuse of the muscles, an atrophy taking place in the anterior and posterior tibial muscles, resulting in a letting down of the arch of the foot, together with pain in the arch of the foot about the external malleolus, the pain often extending to the insertion of the internal lateral ligaments of the knee; we also have pain in the hip joint, occasionally in the small of the back and often between the shoulder blades.

In the latter class of cases, much benefit can be obtained by having the patient go through muscle exercises and the use of the Zander apparatus, which develop the muscles that hold up the arch of the foot, and by having the patient bear the weight of the body on the outer side of the foot; this can be aided by building up the inner border of the shoe from one-eighth to one-fourth inch and attaching a Thomas projecting heel, and the patient walking so that the inner borders of the feet are parallel.

In this class of cases, if arch supports are needed, I use felt pads shaped to conform to the arch of the foot, with sufficient thickening to give proper support and elevation until the muscles are developed to support the arch of the foot properly.

GONORRHEAL INFECTIONS OF THE FEET

In considering the various causes of painful feet, I do not think that a proper amount of consideration has been given to the neisserian infection, when we consider that about 60 per cent. of the male population acquire the infection. The trouble in the feet may occur in the first week of the infection. It may appear years after the original attack from a focus in the prostate and seminal vesicles of the male, or from the tube and ovaries in the female, producing periostitis, bursitis and spurs. I have experienced some unlooked for surprise from making a uniform agglutination fixation test in acutely inflamed feet. Roentgenoscopy reveals the rarefaction of the bones and spurs.

Cases 4 and 5 are striking illustrations:

CASE 4.—Mr. M., the proprietor of a drug store, had feet which were painful on walking and on pressure, tender and swollen. He had been treated by various consultants in the past two years with all forms of antirheumatic treatment, without any benefit. In my judgment, his feet had the appearance of neisserian infection. When I made this suggestion to the doctor, both the doctor and patient became very indignant, as the patient had been married eight years with two healthy children. At first, the patient objected to examination, but later consented. A large inflamed right lobe of the prostate was found, and from the secretion expressed and sent to the laboratory, active virulent gonococci were found. Under appropriate treatment, massaging of the prostate and protargol irrigation, the pain in the feet entirely disappeared and the patient made a perfect recovery and is able to go about in ordinary shoes.

CASE 5.—Man, aged 23, chauffeur, had gonorrhea at the age of 14. Owing to a painful heel at the age of 18, a roentgenogram was taken which showed spurs; he was operated on and the spurs removed; pain was not completely arrested and a second operation was performed, when the pain disappeared for four years, but reappeared. He applied at the Hospital for Deformities and Joint Diseases. History of last atack of pain in the heel dates back to two months, when he began to suffer pain in both heels extending over the malleoli; arches weakened, movements limited, especially dorsal flexion and adduction. He still had a morning drop; urine shows presence of gonococci. Roentgenoscopy reveals a new outgrowth of bone over the area previously operated on; also spurs. Patient is now under treatment by massage of the prostate, irrigation with protargol and autogenous vaccines; later an operation will be performed.

TUBERCULOUS INFECTIONS OF THE FOOT

This is found most often in children, appearing gradually with some swelling and pain, local tenderness on pressure, and the child shows a slight limp. Later the swelling increases and there is a breaking down of the infected area. The Roentgen ray shows rarefaction and breaking down of the small bones; the von Pirquet is generally positive, and an excess of acid-fast bacillus is found in the feces.

I have been successful in curing a number of such cases by the building up of the general health of the patient, and soaking the affected foot in hot water for one hour three times a day; we thus obtain a primary hyperemia from the hot water, and a secondary one when we replace the water pressure of 62½ pounds to the square inch by the atmospheric pressure of 16 pounds, thus keeping up the hyperemia for some hours.

SYPHILITIC CONDITIONS OF THE FOOT

The periostitis and osteitis of the bones of the foot and gumma of the soft parts are found in congenital and later acquired syphilis, in which we have pain and great local tenderness, which, if promptly treated by our syphilitic remedies, does not break down; but on delay, we may have to resort to surgical procedure.

As aids to diagnosis, we have (1) patient's history; (2) finding the *Spirochaeta pallida;* (3) Wassermann test; (4) Noguchi test; (5) the Roentgen ray, showing (*a*) periosteal thickening, and (*b*) a uniform bone shadow of compact and cancellous tissue (first report by the author, 1906), on which a diagnosis should be made without a blood test.

For the treatment of syphilitic bone conditions, an intravenous injection of salvarsan is given and repeated every seventh day, from three to six injections being given, after which inunctions of unguentum hydrargyri, 50 per cent., are applied daily. If evidence of salivation appears, the mercury is discontinued for a time.

CASE 6.—Mr. N. H., aged 36, was referred to me by Dr. Fishberg, examining physician for all medical cases applying at the United Hebrew Charities, City of New York. Patient had complained of pain in both feet and had been advised to wear foot plates. Not having the means to purchase these, he was referred by the doctor to the Hospital for Deformities and Joint Diseases, without his making a personal examination. The following history was obtained, Sept. 22, 1913: Six months previous to onset the patient suffered with headaches, which were so severe at night that he was compelled to discontinue his occupation, which was that of a waiter. Oct. 23, 1913, he had fever and chills during the night; the following morning, he was unable to get up; the left knee was swollen and powerless; he complained of pain when attempting to bend it. He sent for Dr. A, who diagnosed the condition as rheumatism and applied black salve (ichthyol); the patient was under his care for four weeks, but the condition remained unchanged; Dr. A therefore referred the patient to Hospital 1 under care of Dr. B; here he received twenty-one treatments of baking apparatus at the rate of three treatments per week; but as he felt no better, Dr. B referred him to Hospital 2, where he came under the care of Dr. C in the orthopedic department; this doctor diagnosed the condition as loose cartilage and applied a plaster cast for two months, but no relief was obtained. Then the patient sent for his lodge physician, Dr. D, who diagnosed the trouble as synovitis and tried to tap the knee twice in two places, but did not succeed. Next the patient was referred to Dr. E at Hospital 3; but as Dr. E was not there at the time, he came under the care of Dr. F, who immediately removed the cast, believing that this would cause ankylosis. He cauterized the knee

three times a week for several months, tapped it, and had a knee cap made which the patient was still wearing when he applied at this institution. As he still obtained no relief, Dr. D referred him to Hospital 4 under the care of Dr. G.; a roentgenogram was taken which, the physician said showed tuberculous spots of the bone, and Nov. 19, 1912, an operation was performed in which a portion of the tibia was removed; the patient remained in the hospital four days, was discharged and instructed to return three days later, which he did; at this time he was examined by a dispensary physician and then advised to return three days later; meanwhile the patient became feverish and chilled and complained of sticking pain. he sent for Dr. D, who said he was too ill to be removed to Hospital 4, and was therefore transferred to Hospital 5, where he remained for eleven weeks; his knee was opened and cleansed thoroughly; then a cast was applied for eight weeks; in January, 1913, he was discharged; then Dr. F. in charge of the orthopedic department at Hospital 5, was sent for, and having recognized him, instructed him to return to the dispensary at Hospital 5, his knee was cauterized, baked and massaged for several months; following this treatment, he was able to bend the knee; the swelling decreased considerably and the pain was somewhat relieved.

In February he complained of severe pain and cramps in the left ankle during the night; the following morning, he noticed swelling present; he went to Dr. F. and a roentgenogram was taken which showed some injury to the bone. June 14 the patient was sent to Hospital 5 and an operation was performed in which the bone was scraped. Dr. H. diagnosed it as synovitis and applied a cast for four weeks, but the condition remained the same. Finally the patient applied at this institution for treatment, Sept. 22, 1913. He was referred by Dr. Fishberg for foot plates.

Objective evidence of the knee joint: 1½ inches larger than the opposite knee; has a synovitis in which motion produces scarcely any pain and the limitation of the motion is only by the restriction fluid in the joint. Ankle 2 inches larger than the opposite ankle; no pain or tenderness on pressure with limitation of motion.

The swollen appearance of the patient's feet and ankles led me to suspect syphilis. The roentgenongram of his foot showed syphilitic periostitis. The Wassermann determination was 4+ positive. The point of interest in this case is that after passing through five different institutions and medical examinations by eight physicians, in no case had the Roentgen ray excited suspicion as to the patient's trouble being syphilitic, and in no institution was a Wassermann or Noguchi test made. The patient, under salvarsan, mercury and iodid, made a perfect recovery, wearing a Frauenthal knee splint for a short time, owing to the relaxed condition of his knee joint. The swelling and discomfort in his feet were completely relieved after two weeks of antisyphilitic treatment. He has remained well for the past two years.

GOUT

The causes of gout have not yet been positively ascertained, for there is still a doubt as to whether it is due to the defective elimination of the urates themselves, or, on the other hand, whether it is a disturbance of the purin bodies, which will later result in the formation of combinations of urates. The clinical entity called gout is brought about by the sodium biurate and other imperfect combinations of uric acid deposited in the tissues.

There is no doubt that all the large joints are affected with gout, but the most frequent affection is in the big toe. Pain, swelling, redness of the toe and an inclination to keep the foot elevated are the characteristic symptoms.

The internal administration of colchicum does not change the quantity of urea eliminated, and there is a decrease in the excretion of uric acid.

This in no way explains the relief of pain and the subsidence of symptoms when colchicum is administered; neither can I add any light on the rapid relief of the symptoms, when we carry in our mind the joint pathology.

For a period of twenty years I have given to patients in an acute attack of gout, involving the smaller joints or the knee, treatment which consists of applying sponge electrode saturated with the fluidextract colchicum attached to a galvanic current, reversing the current every two minutes, using the current of a strength up to the patient's point of tolerance of pain. Three treatments in thirty-six hours relieved all the acute symptoms of pain, swelling, etc.

Case 7.—Mr. F. V. W., manager of a hotel, whom I first saw in consultation, April 16, 1909, was confined to bed after an acute attack of gout involving the right big toe. In all previous attacks he had been in bed from two to three weeks and reconciled himself to remain that time. When I saw him I informed him that if he would come down on crutches to my office in a cab, I would give him relief in less than three days. He regarded this prognosis as ridiculous, but said that sooner than remain in bed and suffer the agonies of the disease, he would take a chance. After the second treatment, he was able to put his foot on the ground, and on the third day, discarded his crutches and walked about, since which time (1909) he has been treated for seven attacks by the same method.

OBLITERATING ENDARTERITIS

This is a common disease among Russians, Poles and Galicians, characterized by the following symptoms:

The subjective symptoms differ only in the intensity. The patient complains of intense pain in the toes and feet extending up the leg, increasing at night.

The objective symptoms are:

1. The patient walks with a distressed gait, resembling painful flatfoot, for which he is often treated.
2. The feet appear blue, congested and cyanotic, but the pressure of the hand and manipulation of the foot elicit little pain.
3. The sensitiveness to heat and cold is diminished.
4. The skin has the clammy feeling of death. Nothing that I have felt has this cold uncanny feeling, except a cadaver.
5. The pulsation of the plantar arteries is either unrecognized or decidedly enfeebled.

The pain is so intense at night as to cause the patient to lose his sleep. In severe cases the patient remains in a chair to sleep for a short period, and then has to walk about. The pressure of the shoes adds to the pain, so some form of felt shoe, or similar material, is adopted, or in some cases a flannel cloth is wrapped around the foot and a large rubber or slipper is worn.

The pain is not so great in warm weather, but the symptoms, although growing more severe, gradually extend over many months and in some cases over years of time.

In some cases there is a type of atrophy of the toe, a darkening of the skin with a dry gangrene appearance, in which the progress of destruction differs materially in its rate of progress to that found in other forms of gangrene; in some cases the destruction of the toe occupies a period of years and only then are the toes partly destroyed.

Several of the patients applying for treatment were wearing arch supports, put on at institutions, regarding the affection as a type of flatfoot. In some the gangrene process began after an injury in cutting the nail of the great toe; in other cases after paring the corn on the small toe too closely. (There is a case for $25,000 now pending in court [Hamburger *vs.* Levy]

in which the gangrene extends from the cutting of a corn and amputation at the middle third of the tibia was performed.)

This sounds a warning to physicians as to the danger in this class of cases of any interference for ingrown toe nail, corns, etc., as the starting of a gangrene process.

The investigation of a number of similar cases shows that all local application and inward medication has afforded but little relief, and that a large number of amputations have been done to relieve the painful symptoms, in the hospitals of New York City.

In my own experiments, I found that the high frequency electric current, though it gave some relief, whitened the purple skin and seemed to cut off the circulation to such an extent and for so long a time that I feared an ulcer would develop at the spot.

Dry heat from 200 to 400 F. gave a relief of pain for a time, but no improvement to the gangrene; this was also true of hot water and normal salt solution carried to the patient's tolerance to this form of heat. Morphin or other anodynes fail to give relief of the pain.

Case 8.—S. L., man, aged 39, Russian, a cutter, with no history of syphilis or tuberculosis, uses alcohol and tobacco moderately. He has one brother who was similarly affected, who at the age of 19 had the right leg below the knee amputated, and two years later, had his left leg amputated above the knee, since which time the brother has remained in good health with no extension of the process. The patient consulted me at the hospital in November, 1907, for a pain in the left foot which extended up the posterior part of the leg to the knee, which had begun two years before. He had not been able to work for six month, nor had he worn a tight shoe on the left foot for six months. For five months he had not slept in a bed but in a chair, and only for a short period at a time. When he was compelled to walk about to relieve the pain, the foot had constant pain which was accompanied by lightning-like radiating pains up the leg from time to time, being more frequent at night.

The foot was cold blue, with a beginning gangrene of the little toe; the arteries could scarcely be felt. The patient had already been given local heat to the feet by hot sand, salt and water, also with various local applications of salves and ointments together with internal medication, without permanent benefit or the arrest of symptoms. I determined to try the effect of the heat and light as obtained from a 500 candle power incandescent light. The heat was interrupted every few seconds, but only when he could no longer tolerate it; this was kept up for a period of fifteen minutes on his first visit. On his return the next day he declared he had slept during the night for a longer time than in months and without pain. I thought this was merely mental suggestion; I repeated the treatment daily for five days regularly, after which patient again wore shoes and continues to do so. The pain gradually disappeared, the gangrene in the little toe resolved and a new nail appeared, and the patient has been well without symptoms for the past six years. He has continued his treatment at home by means of a small lamp.

We have treated over 300 of these cases at the Hospital for Deformities and Joint Diseases, our present method of treatment consisting of the administering of one-fifth grain extract of thyroid three times a day, giving from 300 to 500 c.c. salt solution subcutaneously, and exposing the patient's foot for twenty minutes to white light to the point of tolerance of heat; I also advise exposure to sunlight when possible. This treatment arrests the process and stops the pain in a large number of these cases.

I have seen but two cases of obliterating endarteritis in American-born citizens.

Case 9.—One foot of the patient had been removed at the Presbyterian Hospital for a similar condition. When they advised the removal of his other foot two years ago he came under my observation. The process has been arrested, the pain has all disappeared under only white light treatment, and he is now able to attend to his work.

CONCLUSIONS

We can regard feet as normal only when the foot in action moves through the normal plan of action in relation to the leg. To have feet perform their normal function, nothing is more important than proper shoes. In adapting treatment for painful feet, we must determine whether we are dealing with an infection of the foot or a relaxed condition of the supporting structures.

If the pain comes on acutely, we have infection (except with trauma); if the pain is developed gradually, we have relaxation of the supporting structures.

The promiscuous application of foot plates has been condemned by many of the leading orthopedic surgeons. There is no doubt that there are many cases of painful feet due to strain that require some support under the arch. This can best be done by some yielding, springy substance, such as felt, much better than metal arch supports, and the sooner they can be removed, the better for the patient. The foot should have freedom of action in locomotion, not fixation.

ABSTRACT OF DISCUSSION

Dr. Robert W. Lovett, Boston: I wish to mention some work that I did and recently reported in The Journal, that some of you may have seen, in which I tried to make the point that the word "flat" foot was used too extensively, and that in many cases such feet were not flat. I called attention also to the fact that I personally believe more people have trouble from high arches than from low arches, and that the element of pronation did not come in. Dr. Whitman complimented me by taking issue with me, and held that pronation was a necessary element in painful feet. In the eight hundred cases examined, the ones that were pronated were not any more prone to pain than the ones that were nonpronated, and I personally do not believe that any man living can go through a hundred feet and pick out with any degree of precision the feet that are likely to be enduring under strain and the feet that are likely to give out under strain. Since I have been specially interested in this subject, I have been taking note of the people who come to my office for treatment for static difficulties in the feet. Of course, the causes that Dr. Frauenthal speaks of we have got to recognize definitely, but in regard to static pronation, I personally believe more people have trouble with high arches than with low arches.

Dr. John Ridlon, Chicago: I should like to ask that Dr. Frauenthal in closing explain a little more fully just what this white light is.

Dr. Emil S. Geist, Minneapolis: I feel that a great many cases of so-called weak foot are erroneously diagnosed, and am of the opinion that these cases need as much care in examination and diagnosis as other human ailments receive in our offices. We are prone to dismiss these patients suffering from foot complaints without giving them sufficient thought and attention, prescribing merely an arch support, some exercises, and trusting to luck that they may get better. I believe if we look more at the matter of etiology, we will find that foot complaints can be divided into many classes, and that instead of the ordinary static problems, we will often have to consider many other etiologic factors in arriving at the best method of treatment in these cases of so-called weak foot. Of course, not all infectious arthritides are due to some focus situated in the mouth or its environs. However, we must frequently remove the possible focus, hoping that it may be the one which is giving

the trouble. If we do not cause general improvement, we will always cause local improvement at any rate. Another important point to remember is that many of us expect too much from the removal of a possibly diseased focus. We cannot expect a joint which has been riddled by disease for years to recuperate and resume normal function, merely because we have removed an infected tooth, for instance. The fire is over and the damage has been done. We must get on the ground with our fire extinguisher at any early hour and not wait until the fire is over.

Dr. Roland Meisenbach, Buffalo: In considering painful feet, we must remember that there are many causes, whether they be due to anatomic variations, static errors, infections, a lack of tone of the tissues, or following fractures in or near the feet, or a combination of the above. Dr. Frauenthal has enumerated many of these in his paper. He has, indeed, covered a vast field, and I am sure he will agree with me that he has only briefly touched on many of them. The successful treatment of painful feet surely depends on our being able to attack the cause as well as the effect. I especially think of the cases in which there may be infection far remote from the feet, that develop painful feet after the severe infection has subsided. I am inclined to believe that some of the local infections of the feet occur through the skin, by absorption. I do not believe it is possible for one to say dogmatically that plates are of no value. I know that there are types of feet that require the proper plates, and that there are other types of painful feet that should not have plates. In considering the question of plates, one should remember that plates are applied to feet for two reasons: First, to support the feet properly and make them functionate correctly, and secondly, to strengthen the foot structures. In order to make the feet functionate properly, the plates must be cut according to the symptoms, as well as to the anatomy of the foot, which are only understood by the surgeon who has studied the case. The plate should be of such flexibility that it will bring into play the very muscles or tissues of the foot and leg which the surgeon believes will strengthen the foot. I find that so many are wearing plates of a rigid type, so as to splint all the joints of the foot as well as actually to prevent muscular action. This is the wrong type of plate, and is found frequently in the shoe stores. Although at first they may give temporary relief, the ultimate result is to weaken rather than strengthen the foot. It should be remembered that plates should be applied only as an adjunct to any other treatment which may be necessary, either general or local. Even in cases in which we have exostoses or faulty function after fracture, plates may be of great value in obtaining the results.

Dr. E. A. Rich, Tacoma, Wash.: I should like to ask Dr. Frauenthal to state in his conclusion the rôle that the ordinary plate plays in his work.

Dr. E. W. Ryerson, Chicago: I am anxious to be convinced of the value of these light treatments. It seems to me, considering the matter from the standpoint of an ordinary, plain thinker, that electric light treatment for these painful osteo-arthritis cases, of which we all see so many instances, is the purest kind of bunk; but if it is true, I want to be convinced, and the recital of a few cases which have been benefited has not particularly convinced me. I should be very glad if Dr. Frauenthal would at some future date—say next year—present to us some really convincing scientific evidence of the value of the light treatment. There are lights and lights, and a whole lot of people are using this light and that light—and a white light is better than a blue light and a blue light is better than a white light, and personally, I do not know where we get off. If there is anything in it, I want to use it, but I have got to be shown.

Dr. John Ridlon, Chicago: What is that lamp called?

Dr. Henry W. Frauenthal, New York: Answering Dr. Ridlon, the light I use in my office is what is known as a lucodescent lamp. What I have my patients use is a small lamp they buy from the Edison Electric Company, costing $8. I try to get the patients in some house wired for electric light. The size of the lamp is of no importance, because you heat the feet up to the highest point of tolerance. I think we have a record of over three hundred cases. As a question of diagnosis, a number of these cases I have from time to time shown to Dr. Willy Meyer, who was interested in this particular class of cases. One of the gentlemen asked me what plate we use at the hospital. We do not use any plates. We use firm felt cut out to conform to the foot and elevated to support the arch, because it holds up firmly and is springy. That does not do for static feet. You must manipulate them, and then if you bake them and keep up your massage, some of them get to be fairly good feet. The type of foot to which I want to call attention particularly is that in which the trouble is due to secondary infection. In the last year we have observed a great many of these feet, and our class of women with painful feet is almost as large as our class of men. They get some relief at first by wearing a plate obtained at a drug store or at a shoe store, and then as they do not get any better, they apply to an institution.

THE STABILITY OF THE INFUSION OF DIGITALIS*

ROBERT A. HATCHER, M.D.
AND
CARY EGGLESTON, M.D.
NEW YORK

It is generally recognized that the infusion of digitalis deteriorates rapidly; in fact, it is often stated that digitalis and all of its preparations undergo rapid changes. Several pharmacopeias, notably the German, French and Swiss, direct that the leaf shall not be kept longer than one year despite the utmost care in its preservation.

We have shown[1] that when the leaves are kept with the least care for periods up to twenty-five years, they retain a degree of activity equal to that of fresh leaves of good quality, and that a fluidextract made thirty years previously was quite as active as one of good quality recently made.

Digitalis is not completely exhausted in making the infusion by the official process, in which the bruised leaf is directed; hence this process was modified slightly and the infusions used in the present investigation were made as follows: Powdered digitalis of good quality was infused on a water-bath for one hour at a temperature of about 95 C. This process results in exhausting the powder almost perfectly, as shown by a subsequent test of the marc. Incidentally, it may be remarked that three infusions made in this way from the same specimen of powdered leaf during a period of six months showed activities of 97.5, 100, and 102 per cent., respectively, the second serving as the standard.

The infusion for the first series of tests was filtered while hot and divided in equal portions. Alcohol and cinnamon water were added to one portion according to pharmacopeial directions, and water (in place of the alcohol) and cinnamon water were added to the other, the two representing similar proportions (1.5 per cent.) of digitalis.

The hot infusions were put in bottles which were then securely corked, the contents being nearly sterile but not absolutely so. Several of the bottles that con-

* From the Laboratory of Pharmacology of Cornell University Medical College.

* The present investigation was undertaken at the request of the Therapeutic Research Committee of the Council on Pharmacy and Chemistry of the American Medical Association.

1. Hatcher, R. A., and Eggleston, Cary: Am. Jour. Pharm., 1913, lxxxv, 203.

tained infusion made with alcohol were labeled A, and placed in the ice-box, the others that contained the hydro-alcoholic infusion were labeled B, and placed in an incubator in which the temperature was maintained at 37 C. Similarly, half of the bottles that contained the infusion made without alcohol were labeled C, and placed in the ice-box; the remainder, labeled D, were placed in the incubator.

The activity of the fresh infusion was tested by the cat method after 0.85 per cent. of sodium chlorid had been added to it. The specimens kept in the ice-box and those in the incubator were tested in the same way after varying intervals of time.

The cat method, in brief, consists in injecting the test-preparation slowly and continuously into the vein of a cat until death results. The weight of digitalis represented in the fluid used is calculated and is expressed in terms of milligrams of the drug per kilogram of animal weight. An amount of the fresh infusion representing 120 mg. of the drug was required per kilogram of cat used in the test.

When precision in the results is demanded, as many as six animals may be required for each test, because some animals are more tolerant than the average, and a few are unusually susceptible; but since slight changes in the activity of these specimens were not considered important, we used from one to four animals for each test.

This explains why some specimens of the infusion actually appear to be more active after having stood for a time, but these discrepancies are slight, and the total number of experiments performed suffices to insure results that are sufficiently accurate for the purpose in view.

In a few cases it was necessary to reject the results of single experiments owing to evident gross abnormalities of the animals. The following example will serve as an illustration: Four animals were used in a test, the figures obtained being 103, 105, 111, and 173 mg. per kilogram. In this case the calculation was based on the figures of the first three experiments, which were nearly uniform, the fourth animal being obviously tolerant.

In a few cases we were also forced to reject experiments, even though their inclusion would have given our results the appearance of greater uniformity. Thus Specimen 3 (Table 3), tested after an interval of seven days, had an activity corresponding to 103 mg. per kilogram, which was evidently too high, when viewed in the light of subsequent tests; another test of this specimen made on the same day gave 113 mg. per kilogram (agreeing exactly with the results obtained in the last test of that specimen), but we were compelled to reject the higher figure because one of the animals used was subsequently found to be lactating, and experience has shown that many lactating cats are remarkably tolerant toward digitalis.

Such irregularities are the exception, however, and in some tests none of the figures varied by more than 2 or 3 per cent. from the average. In one of these tests the figures obtained were 108 and 109; in another 115, 116 and 119. A typical test, in which four animals were used, gave the figures 105, 116, 117 and 122 mg. per kilogram, the average of these four being 115.

Table 1 gives the results obtained with the infusions previously described. The interval during which the specimen used in a given case was kept in the ice-box or incubator before being tested is expressed in days. The amount of digitalis represented in the infusion required is expressed in milligrams of digitalis per kilogram of cat weight. The number of animals used in each test is shown by the bracketed figure.

TABLE 1.—MILLIGRAMS OF DIGITALIS PER KILOGRAM OF ANIMAL

Specimens	Intervals in Days				
Freshly made 120 (3)	3.	7.	14.	21.	28.
A (alc., ice-box)	.....	115(2)	.....	129(2)	125(1)
B (alc., incub.)	116(2)	128(2)	135(2)	117(2)	154(2)
C (aq., ice-box)	.....	123(3)	113(2)	152(2)	149(2)
D (aq., incub.)	112(3)	155(2)	160(2)	153(2)	180(1)

Table 2 shows the activities of the infusions expressed in percentages, the initial activity of the fresh infusion being taken as 100 per cent. The figures showing the intervals in days correspond to those in Table 1.

TABLE 2.—ACTIVITIES OF INFUSIONS EXPRESSED IN PERCENTAGES

Specimens	Intervals in Days				
	3.	7.	14.	21.	28.
A (alc., ice-box)	...	104	...	93	96
B (alc., incub.)	103	94	89	102	78
C (aq., ice-box)	...	98	106	79	80
D (aq., incub.)	107	77	75	78	67

The results given in Tables 1 and 2 will be discussed later with those of other experiments.

It may be objected that infusion of digitalis is not commonly kept unopened, as our specimens were; hence we decided to subject the preparation to conditions more nearly simulating those found in practice, and also to extreme conditions such as could never obtain even with the greatest carelessness.

For this series of tests an infusion was prepared, June 24, 1915, essentially as previously described, except that distilled water was used in place of the alcohol and cinnamon water. The filtered infusion was then divided into several portions and placed in bottles while hot. These were labeled and kept for various periods of time under the following conditions:

1. Allowed to stand uncorked at room temperature.
2. Corked but opened three times daily and a small amount removed each time.
3. Securely corked and allowed to stand at room temperature during two and a half months of summer. The average temperature was 75.5 F.
4. About 10 gm. of floor sweepings were added to the contents of the bottle, which was then shaken thoroughly and allowed to stand at room temperature.
5. About 10 gm. of fecal matter from a cat's intestine was added to the contents of the bottle, which was then shaken thoroughly and allowed to stand at room temperature. This specimen developed an intensely disgusting odor, with the evident multiplication of micro-organisms.

The results of the several tests of these specimens are shown in Table 3. The intervals during which these specimens were allowed to stand were so variable that they are best given for each test; hence the figure under "age" indicates the number of days during which each specimen was kept before the tests. The figure under "dose" indicates the number of milligrams of digitalis in the infusion required per kilogram of animal. The bracketed figure shows the number of experiments in the test. The freshly prepared infusion represented 115 mg. of digitalis per kilogram of cat weight.

The following experiments, which cannot be tabulated conveniently, may be presented here:

An official infusion of digitalis that had been kept stoppered at room temperature (about 70 F.) for nineteen days was tested and found to be of exactly the same activity as when freshly prepared. After having been opened, it deteriorated slowly. A specimen of an infusion was allowed to stand open in an Erlenmeyer flask over a radiator for one month, water was then added to make up for the loss by evaporation, and when tested it was found to be about 50 per cent. less active than when freshly prepared. Another specimen of the infusion, to which chloroform was added, retained its full activity during a period of eighty days of summer, although the chloroform had completely disappeared when it was tested.

The rapid deterioration shown by the specimen which contained fecal matter (No. 5, Table 3) suggested the possibility that the colon bacillus might be concerned in the change. An infusion that had been prepared in the manner already described was therefore sown with a pure culture of the colon bacillus from the human intestine, 0.5 per cent. of Witte's peptone having been added to facilitate the growth of the organism, and the mixture was placed in the incubator for a period of nine days.

COMMENT

The most striking facts shown by our experiments are that an infusion of digitalis made without alcohol and kept without the least care, in fact, under more unfavorable conditions than could obtain in practice, may retain its activity with little impairment for periods varying from six to nineteen days; and that when the hot infusion is bottled with reasonable care, it will often keep practically unchanged for many weeks even during the summer.

We do not maintain that the infusion of digitalis is a perfectly stable preparation. On the contrary, it is not. Practically all vegetable infusions undergo deterioration when kept standing; but the idea has prevailed that the infusion of digitalis is especially unstable. There does not appear to be any basis for this belief.

The specimen made by the official process and kept in the ice-box for a period of four weeks retained its activity practically unchanged. That made without alcohol and kept cold lost nothing in two weeks; but these results are overshadowed by those obtained in the second series of experiments.

The specimen that was opened frequently, and kept under conditions much like those which obtain in practice, lost nothing in three weeks, and that is longer than an infusion should be kept on hand by a patient. It is surprising that a specimen mixed with sweepings from the floor should have retained its activity unimpaired while standing at room temperature for nearly three weeks. The slow deterioration of the specimen that had been planted with a pure culture of the colon bacillus is also noteworthy. Rapid deterioration was to be expected after the addition of fecal matter, and it is only surprising that the rate of deterioration was not greater.

The results of our experiments may seem new and striking to the reader who is accustomed to hear much about the extreme instability of preparations of digitalis, and of the infusion especially, but thirty-seven years ago Prall[2] stated that the filtered infusion of digitalis will keep as long as it is ordinarily required by the patient. Two years later Binz[3] stated that the infusion decomposes owing to a mold, and that sometimes it keeps well and sometimes it does not. Certainly a moldy preparation should not be used therapeutically.

The question naturally arises why the infusion and other preparations of digitalis should be reputed to decompose so rapidly if they are actually as stable as we maintain.[1]

The chemistry of digitalis presents many difficulties to the investigator, and we do not know in what

TABLE 3.—ACTIVITIES OF INFUSION OF DIGITALIS KEPT UNDER DIFFERENT CONDITIONS FOR VARYING INTERVALS OF TIME

Specimen. Fresh 115 (4)	Age, Days	Dose, mg.	Age, Days	Dose, mg.	Age, Days	Dose, mg.	Ultimate Loss in Percentage
1. Uncorked	6	122 (2)	13	114 (2)	20	115 (2)	26 per cent. in 20 days
2. Opened frequently	8	122 (2)	21	98 (2)	...	...	None in 21 days
3. Corked, summer temp.	7	103 (3)	20	117 (2)	79	113 (2)	None in 79 days
4. Sweepings added	6	104 (2)	13	116 (3)	19	101 (2)	None in 19 days
5. Fecal matter added	5	147 (2)	12	164 (3)	18	194 (3)	40 per cent. in 18 days

At the end of that time it was tested in the usual manner and the activity compared with that of the freshly made infusion. It was found to have lost about 10 per cent. of its activity. While this difference is slight, it is interesting to observe that the activity was determined with a considerable degree of precision both before and after the period of incubation.

The following experiment may be described here because it bears directly on the problem in hand, though it was made during the course of an investigation begun about a year previous to the time of undertaking the one described in this paper:

Powdered digitalis was mixed thoroughly with an equal weight of water, placed in a glass-stoppered bottle and allowed to stand at room temperature for about six months, at which time it was found to be nearly inert. A mold had developed within a few days after placing the moist powder in the bottle.

This experiment was repeated in part, the moistened powder having been set aside, Nov. 24, 1914. It became moldy within a few days, but when tested, March 20, 1915, having stood about four months, it had lost only about half of its activity, and it is interesting to note that an infusion prepared from this moldy digitalis gave a blood pressure tracing that was typical of digitalis action. This is of especial interest in view of the commonly accepted opinion that moldy digitalis, and old aqueous infusions of the drug, develop principles having picrotoxinlike actions.

2. Prall: Am. Jour. Pharm., 1878, p. 424, quoted from Proc. Am. Pharm. Assn., 1879, p. 72.
3. Binz, quoted from Proc. Am. Ph. Assn., 1880, p. 45.

form the active constituents exist in the leaf, or what changes and transformations of one active constituent into another take place during extraction and on standing.

The therapeutic use of this drug is also rendered difficult, partly by reason of the fact that it is necessary to use a dose that borders closely on the toxic in order to secure the full therapeutic effects, and partly because comparatively few physicians can become sufficiently expert in the treatment of cardiac disease to determine in difficult cases whether a given condition results from the progress of the disease, from insufficient dosage or from overdosage.

This difficulty is due to the fact that cardiac insufficiency and various types of irregularity are common in many forms of cardiac disease and digitalis overdosage even in the absence of cardiac disease, and, further, that the toxic actions of digitalis may be elicited without the appearance of any therapeutic effects.

The well-known disadvantages of digitalis have served as a constant stimulus to the exploitation of proprietary preparations of it, and many manufacturers have persistently exaggerated the disadvantages of the drug and its official preparations in order to magnify the advantages claimed for their specialties.

We would not be understood as advocating the general employment of the infusion of digitalis. It is necessarily of variable activity as obtained from different pharmacists, and it is probably also of varying degrees of stability as thus obtained. The actions of the infusion differ in no way qualitatively from those of the tincture or the leaf, and these can be obtained of more nearly uniform activity, and certainly of greater stability than the infusion. The dose of either is smaller, and we know of no indications whatever for the employment of the infusion in preference to these two.

CONCLUSIONS

1. The infusion of digitalis is fairly stable when prepared and kept with ordinary care, no important change then occurring within a week.

2. The addition of alcohol to the infusion is unnecessary.

3. Old, and even moldy, digitalis and its infusion may give the typical digitalis actions qualitatively so long as they retain any considerable degree of activity.

4. A properly made infusion of digitalis represents the leaf practically in its entirety, the action being qualitatively like that of the tincture.

5. Owing to the variability in activity of the infusion as it is commonly obtained, the tincture should be preferred to it in therapeutic practice.

414 East Twenty-Sixth Street.

The Migration of Flies.—Recently Mr. George B. Harrison, president of American Balloon Pilots, said that flies had been encountered in strong air currents at high altitudes. He declared that on a recent trip, from southern Texas traveling north, they encountered an air current at about 5,000 feet altitude, going at the rate of about 60 miles an hour, and that a considerable number of house flies came into the basket of the balloon, being swept along in this tornado-like current. This observation leads to the inevitable conclusion that flies may migrate very great distances, and that in this manner infected flies may be the means of transmitting certain infectious diseases over a wide range of country.—*Kansas State Board of Health Bulletin No. 9*, September, 1915.

THE USE OF MERCURY SALICYLATE IN SYPHILIS

A RECORD OF ITS INFLUENCE ON THE WASSERMANN REACTION IN FIFTY CASES *

KENT NELSON, M.D.
AND
E. A. ANDERSON, M.D.
Surgeon and Assistant Surgeon, Respectively, U. S. Disciplinary Barracks Hospital
FORT LEAVENWORTH, KAN.

The hypodermic use of mercury salicylate in the treatment of syphilis[1] is very general at present. In line with the study of the treatment of this disease we turned to this drug and in December, 1914, began to record our results of its use in syphilis as expressed by its influence on the Wassermann reaction.

Each patient here recorded has had at least two double plus serum reactions on different dates before being placed on this list. As in our previous reports on neosalvarsan and salvarsan, all the serum tests have been made by Captain Charles F. Craig, M.C., U. S. A., thus securing uniformity of technic and interpretation of results obtained. We feel that this adds materially to the value of the work. All cases on this list are fresh cases; that is, cases without previous treatment of any nature. This latter requirement brings forty-three of the fifty cases under the "latent" heading. The remaining seven cases reported are all cases in the secondary stage of the disease. It may be well here to recall the fact that this institution is a military prison where all the inmates are under restraint and lead well-regulated lives, with an abundance of fresh air, good food, regular hours and exercise.

Influences unfavorable to treatment are completely absent and the serum reactions have been influenced solely by the treatment given. Again, in these cases no other drug has been given at any time, it being our desire to have a clear-cut record of the effect of the mercury salicylate when used absolutely by itself. Our dose of the mercury salicylate has been the same in all cases, 100 mg. or 1½ grains.

In the beginning of the treatment we repeated the dose every seventh day. We at once found this interval too short, and so next attempted to give the dose every fourteen days. Here again we found it necessary at times to allow a longer interval between doses, and so came to rely on frequent examinations, with the administration of the dose as often as possible. None of the patients has been salivated, but it has required much care to avoid this. We have kept each patient full to saturation of the drug at all times. Bowels have been kept open by the use of salines when needed. Without exception all of the patients have daily performed their full quota of work. Sore buttocks have been complained of at times following the injections, but in no case has an inflammation resulted and they have always yielded promptly to massage. No one has been excused from work on this account. The treatment has not been seriously objected to by the men, but the injections are not without certain

* From the Prison Hospital, United States Disciplinary Barracks, Fort Leavenworth, Kan.

1. Nelson, K., and Haines, E. F.: Observations of the Results of Nine Months' Experience with Neosalvarsan at the U. S. Military Prison Hospital, Fort Leavenworth, Kan., THE JOURNAL A. M. A., March 28, 1914, p. 989; Observations of the Results of Seven Months' Experience with Salvarsan in the Treatment of Syphilis, THE JOURNAL A. M. A., Dec. 26, 1914, p. 2277.

unpleasant symptoms, and this form of treatment is not popular in this institution.

Objective symptoms yield to this treatment, but such symptoms yield far more rapidly to the salvarsan treatment, and any belief that the effect of the salvarsan treatment is prolonged — aided or reenforced by the mercury salicylate — is certainly no longer tenable. In the light of our experience it seems improbable that the salicylate alone and unaided possesses any real curative value in this disease.

In this institution mercury salicylate is at present the only treatment used and we can quote double the number of cases here reported if we use cases of patients who have had treatment before coming to us. The salicylate does not influence the serum reaction in these cases any more than it does in the cases here reported. In the table it will be noted that the serum reactions of some cases have varied from the double plus to the plus minus or minus, and later returned to the double plus while the treatment was in progress. It is our opinion that these variations in the serum reactions are due to other causes than the treatment.[2] For if they were brought about by the treatment, then why should the double plus reaction again appear when the treatment was being vigorously carried on?

MONTHLY RESULT OF WASSERMANN REACTIONS

Case Number	Date of Beginning Treatment	Stage of Disease	No. Doses Hg. Sal. 100 Mg. Each	No. of Wassermann Reactions	Monthly Result of Wassermann Reactions							
1	12/ 7/14	Lat.	18	8	++	++	++	++	++	++	++	++
2	12/ 7/14	Lat.	10	6	++	++	++	—	++	+	....	....
3	12/ 7/14	Lat.	20	8	++	++	++	+	+	—	++	++
4	12/ 7/14	Lat.	14	7	++	++	++	++	++	±	++	....
5	12/ 7/14	Lat.	16	8	++	++	++	++	++	++	++	++
6	12/ 7/14	Lat.	16	8	++	++	±	—	+	—	±	++
7	12/ 7/14	Lat.	18	8	++	++	++	+	++	++	++	++
8	12/ 7/14	Lat.	20	8	++	++	++	++	++	++	++	++
9	12/ 7/14	Lat.	20	8	++	++	++	++	++	±	—	++
10	12/ 7/14	Sec.	16	6	++	+	±	+	—	++	....	....
11	12/ 7/14	Lat.	13	6	++	++	++	++	+	++	....	....
12	12/ 7/14	Lat.	13	6	++	++	++	++	++	++	....	....
13	12/ 7/14	Sec.	11	6	++	++	++	±	++	±	....	....
14	12/ 7/14	Sec.	18	8	++	++	++	++	++	+	++	++
15	12/ 7/14	Sec.	23	8	++	++	+	+	++	++	—	++
16	12/ 8/14	Lat.	19	8	++	++	++	++	++	++	++	++
17	12/ 8/14	Lat.	16	7	++	++	++	++	++	—	—	....
18	12/ 8/14	Lat.	16	7	++	++	++	++	++	+	+	....
19	12/ 8/14	Lat.	14	6	++	++	+	+	++	+	....	....
20	12/ 8/14	Lat.	18	8	++	++	++	—	—	—	±	++
21	12/ 8/14	Lat.	15	8	++	++	+	++	++	++	++	++
22	12/ 8/14	Lat.	13	6	++	++	++	+	+	+	....	....
23	12/ 8/14	Lat.	17	8	++	++	++	++	++	++	++	++
24	12/ 8/14	Lat.	12	6	++	++	++	—	—	—	....	....
25	12/ 8/14	Lat.	18	8	++	++	++	++	+	—	±	++
26	12/ 8/14	Lat.	17	8	++	++	++	++	++	+	++	++
27	12/ 8/14	Lat.	20	8	++	++	++	+	+	+	±	++
28	12/ 8/14	Lat.	18	8	++	++	++	±	++	+	++	++
29	12/ 8/14	Sec.	19	8	++	++	++	++	++	++	++	++
30	12/ 8/14	Lat.	19	8	++	++	++	++	++	++	++	++
31	12/ 8/14	Lat.	11	6	++	++	++	+	+	±	....	....
32	12/ 8/14	Lat.	13	6	++	++	++	++	++	+	....	....
33	12/ 9/14	Lat.	19	8	++	++	++	++	++	++	++	++
34	12/ 9/14	Lat.	20	8	++	++	++	++	++	++	++	++
35	1/11/15	Lat.	13	6	++	++	++	++	++	++	....	....
36	1/11/15	Sec.	8	4	++	++	++	+	....	....	....	....
37	1/17/15	Lat.	15	6	++	++	++	+	—	++	....	....
38	1/12/15	Lat.	9	4	++	++	++	++	....	....	....	....
39	1/26/15	Lat.	15	6	++	++	++	—	++	++	....	....
40	3/21/15	Lat.	10	6	++	++	++	±	++	++	....	....
41	3/21/15	Lat.	7	5	++	++	++	++	++	....	....	....
42	3/21/15	Lat.	11	5	++	++	++	++	++	....	....	....
43	3/21/15	Lat.	11	6	++	++	+	++	++	++	....	....
44	3/21/15	Sec.	10	5	++	++	++	++	++	....	....	....
45	3/21/15	Lat.	12	5	++	++	++	±	++	....	....	....
46	3/21/15	Lat.	10	5	++	++	++	++	++	....	....	....
47	3/21/15	Lat.	12	5	++	++	++	++	++	....	....	....
48	3/21/15	Lat.	11	6	++	++	++	++	++	....	....	....
49	3/21/15	Lat.	11	5	++	++	+	++	++	....	....	....
50	3/21/15	Lat.	7	4	++	++	++	++	....	....	....	....

If we accept the Wassermann reaction as an indication of the presence of syphilis and of value as a guide in the control of the disease by treatment, then it is certainly fair to believe that mercury salicylate used hypodermically in full doses over many weeks of time has little if any real influence on the disease. In the table will be seen Cases 17 and 24, giving two and three negative serum reactions. In both cases the men obtained clemency and were discharged from the prison at this period of treatment and we were unable to follow them further. It is our belief that a continued record in these two cases would undoubtedly have shown a positive reaction later in the treatment. Had they failed to do so they would have been the first to so record this treatment, for just this thing did occur in Cases 2, 3, 6, 9, 10, 15, 20, 25, 37 and 39. This also clearly establishes the value of more than one serum reaction and the error that would arise from the acceptance of a single negative reaction as final.

We hesitate to say that we consider the unaided mercury salicylate treatment of syphilis to be without value, but feel that its value is so slight as to make it unworthy of the time spent in its administration.

2. Craig, Charles F.: Variations in the Strength of the Wassermann Reaction in Untreated Syphilitic Infections, THE JOURNAL A. M. A., April 18, 1914, p. 1232.

CAUSE AND PREVENTION OF CONSTITUTIONAL SYMPTOMS FOLLOWING DEEP ROENTGEN THERAPY

SIDNEY LANGE, M.D.
CINCINNATI

Since the introduction of the measured massive deep dose in Roentgen therapy, certain more or less unpleasant symptoms following the exposures have been observed. The symptoms are chiefly of a systemic nature. With the production and use of rays of greater penetration, these symptoms have been accentuated. These constitutional after-effects of the massive deep treatments are not merely annoying, but often become distressing and even dangerous. This is especially true when the patients are aged and debilitated or when the patient is cachectic, asthenic or toxic as a result of the presence of malignant, ulcerating or suppurating lesions about the body. The after-effect of the roentgenization is often especially marked in neurotic patients or in patients who have just been subjected to operative procedures. It is an old observation that patients suffering with alterations in the cellular content of the blood or with diseases of the blood-making organs are prone to develop unpleasant symptoms of a distinctly toxic nature after Roentgen-ray treatment.

The symptoms following deep Roentgen-ray therapy vary greatly with the general condition of the patient, with the nature and extent of his disease and with the amount of the Roentgen-ray dosage. The mildest type is an indefinite malaise felt for a day or two after the treatment. It may be so marked, however, as completely to prostrate the patient, necessitating rest in bed from one or two days to a week following each massive treatment. This malaise is often accompanied by marked nervousness and mental depression.

Nausea and lack of appetite are almost constant accompaniments of the malaise, and may result in vomiting. The patient may vomit but once (usually from

two to six hours after the treatment), or the vomiting may persist for days. One robust female patient who had just been operated on for cancer of the breast was unable to retain any food, except water, for eight days after a single treatment. The treatment was quite severe, however, and consisted of eight full doses (200 X); 100 X were administered to the operated side, and 100 X to the unoperated and apparently normal side. (It may not be out of place to mention in this connection that postoperative Roentgen-ray treatment of the breast should never be confined to the operated side but should include the unoperated or apparently normal side. The reasons are obvious.)

With the nausea the patients usually associate the odors of the ozone or other gases formed about the high vacuum tube excited by a high voltage current. Many of them report that the odor lingers with them, producing nausea, or that the sight or even the thought of the treatment, or of the apparatus, or of the operator recalls the mental impression of the odor and results in nausea. I have frequently encouraged patients to describe the unpleasant odor; but, as a rule, no adequate description could be obtained. One patient said that the odor suggested something "burnt;" another described it as resembling the odor experienced when emerging from an ether anesthesia.

The nausea and consequent loss of appetite frequently result in a loss in weight and strength, and may in this way be a factor in prognosis. One patient under treatment for an inoperable carcinoma of the colon lost from 2 to 3 pounds in the two or three days immediately following each treatment. In the intervals before the next treatment he gained from 3 to 5 pounds only to lose part of it again following each succeeding treatment. Another patient insisted on being treated on Mondays, as according to his statement he wanted to enjoy his Sundays.

While the malaise and nausea are the two most prominent symptoms following the massive deep treatments, a variety of other symptoms may appear. There may be rapid swelling of the lymphatic glands in the irradiated areas occurring from two to six hours after the treatment. This swelling of the lymphatic glands following the Roentgen-ray treatment was so marked in one goiter case that the condition was diagnosed mumps and the patient was isolated by the attending physician.

Patients frequently complain of a metallic taste in the mouth for some days after the Roentgen-ray treatment, and are unable to enjoy the flavor of their food. There may be also edema and congestion of the mucous membranes in the areas under treatment, resulting in dryness of the mouth and throat, pain in swallowing, soreness of the intestines, etc.

It should be understood that the foregoing syndrome occurs only when massive doses are employed, and may never appear if the dosage be mild or moderate. But such mild or moderate dosage is often futile in that it fails to accomplish the desired result. If the larger doses are employed, however, these unpleasant symptoms may decrease the weight and strength of the patient or may be so alarming to the patient that he will discontinue the treatment against advice. The practical importance of overcoming these constitutional after-effects is, therefore, evident.

In the search for the cause of these symptoms, the fact that the patient complained of the disagreeable odor in the treatment room directed attention to the gases formed about the tube. Therefore, I tried to overcome the possible effect of these gases by placing a jar of smelling salts near the patient or placing a small bottle in the patient's hand for inhalation during the treatment. This was without appreciable effect on the undesirable symptoms. I then observed that with the onset of warmer weather and the opening of the windows, the patients seemed to complain less of the nauseous odor. An electric fan was, therefore, placed in an open window and the air current was directed to the patient's face. This decreased the nausea, but did not entirely prevent it.

I found that it was always possible to limit or prevent these after-effects by decreasing the dosage, but more especially by decreasing the voltage at the tube terminals. When 9 milliamperes were passed through the tube and from 25 to 30 X delivered per area, the symptoms were very pronounced. When only 5 ma. were passed through the tube and from 15 to 20 X given per area, the symptoms were milder and often absent altogether.

It was further observed that the constitutional symptoms appeared not during or immediately after the treatment, but required from two to twelve hours to develop. Furthermore, the patients suffered most after being under treatment for some time, that is, after the thorough saturation of the tissues by the Roentgen ray and the development of the cumulative effect. It was also apparent that, although the odor in the treatment room produced a recurrence of the nausea, this was only a mental reflex and not the ultimate cause of the nausea. The first treatment produces no *immediate* nausea. At subsequent treatments, however, the odor recalls the nausea, since the patient associates the treatment and its accompanying odor with the nausea.

The effect of the Roentgen ray on living cells is to break them down or at least to increase the catabolic changes in the cells. The products of the metabolic activity in living cells or of the disintegration of protein material are largely acid in reaction. It seemed probable, therefore, that the unpleasant constitutional symptoms following deep Roentgen-ray therapy were the result of an acidosis either local or general. It is known that the reaction produced in the skin by the Roentgen ray is a local acidosis from cellular disintegration, and that it can best be avoided or abated by the local application of the alkalies (as, for instance, Dodd's lotion).[1]

A few clinical tests seemed to prove the correctness of this theory. The administration of sodium bicarbonate by mouth served to ameliorate or prevent the constitutional symptoms in a great many patients. The first patient on whom this medication was carried out was very anemic and weak from uterine hemorrhage due to the presence of a fibroid. Her general condition was such that the possible constitutional after-effects of the treatment were greatly feared. She was given sodium bicarbonate in 30-grain doses every three hours for twenty-four hours previous to the treatment, and this medication was continued for forty-eight hours after the treatment. None of the unpleasant symptoms developed in this case.

I am now prescribing as a routine 30 grains of sodium bicarbonate every three hours, to be continued forty-eight hours after each treatment. When the condition of the patient warrants, it is also given over

1. Dodd's lotion consists of: zinc oxid, one-half ounce; glycerin, 1 dram; phenol (carbolic acid), one-half dram; lime water, 8 ounces.

twenty-four hours just previous to each treatment to increase the alkalinity of the blood and tissues. The patient is also encouraged to drink freely of alkaline waters, especially Vichy. I prescribe also in each case an alkaline lotion (Dodd's formula) to be applied twice daily to the skin areas under treatment as a prophylactic measure against the development of a reaction, and I feel that, as a result of the persistent use of this lotion from the beginning of the treatment to the end, I have been able to increase the skin tolerance and to deliver in this way a greater dose to the underlying tissues than would otherwise be possible.

The dose of alkali which I have been giving is perhaps in excess of what is required, and may be cut down to an amount sufficient to render the urine alkaline. If 5 grains of magnesium sulphate be added, the dose may be further diminished. A bottle of artificial Vichy per day is sometimes sufficient.

5 Garfield Place.

PYORRHEA DUE TO ORGANISMS OTHER THAN THE AMEBAS

GEORGE HOWARD HOXIE, A.M., M.D.
KANSAS CITY, MO.

Since the publication of the work of Bass and Johns on pyorrhea, there has seemed to be a tendency among dentists and many medical men to administer emetin in all cases of dental infections without establishing the presence of the endameba. That the endameba is not the cause of all cases diagnosed as pyorrhea by competent dentists is shown by the history of such cases as that outlined below. Its publication at this time seems, therefore, justified.

History.—A. L., man, aged 18, high school student, first seen Aug. 2, 1912, complained of attacks of sore mouth complicated by fever, earache and knee pains. The family history was negative except for tuberculosis in the second generation on the mother's side (no contact). The patient had been a healthy infant until 3 months of age, when he had otitis with a purulent discharge. The sore mouth began at the age of 3 years, when the attacks began suddenly and recurred every three weeks. He had the usual children's diseases, but was in spite of it all a healthy-appearing child.

Present Illness.—A febrile attack of stomatitis, glossitis or gingivitis (or all three) occurs every fourteen days and lasts from three to five days, ending with the removal of one or more necrotic nodules about one-eighth inch in diameter. His ears "break" and "run" at longer intervals (for example, four times in the last seven years). His left knee swells up and pains him about five days from every four to eight weeks.

The attack begins with a general malaise and fever, followed by a soreness of the mouth, gradually localizing into a swelling of the mucous membrane of the particular part affected. In the center of this area develops a raised nodule, red, hard, but not very tender. This can be seized with forceps and pulled out at the end of from three to five days without much discomfort to the patient, leaving a clean granulating surface. No distinct scar is left. The attacks recur without reference to habits, time of year or food. The knee attacks began last year.

Examination.—The patient is a sturdy young man, self-controlled and showing no neurotic stigmata. The weight varies from 142 to 150 pounds. Systolic blood pressure, from 150 to 138. Chest shows some roughened respiratory sounds. Heart sounds loud and sharp. Lymph glands palpable in neck, axilla and groin. (The cervical glands swell at the time of the attacks.) Spleen not palpable. Ears negative except for scars on membrane. Nasopharynx red and "sticky." Mouth shows about half of the teeth gone and some of the remainder loose. The inflammation about the teeth has gradually destroyed the alveolar processes of most of the teeth, so that the roots are exposed. In some cases pus exudes from the socket on pressure, but in most cases none appears because of the frequent cleanings at the hands of the dentist. Left knee shows now little or no inflammatory disturbance.

Aug. 12, 1912, the lower lip was swollen and red. Attack began two days ago. The right ear was discharging. Malaise was still increasing; pulse, 108; temperature, 101. Bad taste in mouth. Pain in right ear, lip, gums. Tongue flattened and coated with a glairy membrane that could be washed off with an astringent spray, leaving a reddened and glossy mucosa. Culture from ear showed a small diplococcus.

In the interval following this attack the patient was given a course of "rheumatism phylacogen." No result, beyond the temporary chills and malaise.

Following his next attack, a course of stock staphylostreptococcic vaccine was given (a course of autogenous vaccine had been given eighteen months previously). The following attack (October 2) was almost free from the constitutional symptoms, and only one nodule appeared; the next attack, however, was about as usual (October 22). The vaccine treatment was continued, but without distinct effect. Attacks were at their height November 6, 13 and 27. The bacteriologic study of this last nodule showed long rods and various cocci. December 2, an autogenous vaccine (Hecker) was started. In spite of this an extraordinarily severe attack occurred from December 14 to 18.

Jan. 11, 1913, the patient was just over a week's attack; fever to 101; two ulcers on left side of tongue, one on lip, one on buccal-gingival fornix; all on left side of mouth. In this attack the invasion was slow and stopped for two days. Interval between attacks now sixteen days.

January 17, there was "rheumatism" of left knee and fingers of left hand. This cleared up in three days, but the knee was more or less sore in the evening for a month.

The last attack of otitis occurred January 25, and lasted only two days.

March 15, a culture made from the depths of a freshly pulled necrotic plug showed on potato in twenty hours a mold—a closely felted, adherent white growth with black spot in center; small branching colorless mycelia with conical spores. On blood serum, a looser growth, mycelia white, sporangia yellowish. On agar the growth was white with ovoid spores, but when transplanted to potato became black (*Aspergillus niger*). In glucose bouillon, filaments (leptothrix?) with vibriolike forms.

April 4, a culture from material from the depths of the ulcer immediately after the nodule had been pulled out in glucose bouillon showed chains of minute sporelike bodies and a few cocci.

April 17, the pseudomembrane on the tongue showed mycelia under the microscope.

May 31, the "rheumatism" that had been prevailing since May 23 stopped when the plug developed in mouth yesterday.

After attempting to eradicate the sores by curettage and caustics, it was found that the nodules appeared about the tooth sockets or on the parts of the tongue coming in contact with the bad teeth.

Oct. 29, 1913, culture from the bottom of a plug showed a rich growth of *Aspergillus fumigatus*. But a smear from the same plug showed masses of a minute diplococcus, and through them threads smaller than an ordinary mycelium, which stained blue with Wright's stain.

Jan. 2, 1914, a tooth was extracted. From the root a culture showed a diplococcus, a staphylococcus and a streptothrix, all decolorized by Gram.

February 24, ulcer in anal fold. Inguinal glands enlarged and tender. A sore in left buccal mucosa opposite last lower molar, and one on tongue. (Patient has had two or three of these anal ulcers before. They occur coincidently with the oral lesions.)

March 19, culture on blood serum from the depths of an oral ulcer grew at room temperature a rod that united in long myceliumlike branches, not decolorized by Gram.

March 21, 1914, a vaccine made from these cultures was started. This caused some systemic reaction, but seemed to bring on the knee inflammation.

May 22, 1914, neosalvarsan, 0.9, intramuscularly.

June 1, 1914, new attack, as before.

Aug. 31, 1914, withdrew 35 c.c. of clear fluid from left knee. Culture showed a diplococcus not decolorized by Gram and the branching sporulated organism already found in the mouth.

Dec. 15, 1914, all his teeth except the two last lower molars removed. This brought on a severe attack with much hemorrhage from the sockets, which continued intermittently until December 20.

Aug. 13, 1915, the patient has been much better and has lost very little time from his university work. But the attacks still recur at seventeen-day intervals. He is now suffering from another ulcer in the anal fold.

Summarizing the record, we have to do with a recurrent fever of about seventeen years' duration. The focus has been the alveolar processes and the mucosa of the mouth, from which the body has been invaded. The particular parts, aside from the mouth, which have shown evidences of infection, have been the left knee (bursitis) and the anal fold (abscesses). The length of the attacks has varied from three to ten days. The organisms most constantly found have been a diplostreptococcus and a mold. The disease has proved resistant to arsenic (salvarsan, arsacetin and the trioxid), the salicylates and other systemic and local germicides, as well as to vaccines, both autogenous and stock, single as well as mixed.

The question of great interest is whether we have to do with an organism showing a cycle of from fourteen to seventeen days, or whether it is a case of temporary immunity. Repeated examinations have failed to reveal any amebas. Animal inoculation was negative.

To me it would appear that the causative organism is one which is ordinarily nonpathogenic, but which has acquired parasitic power in the tissues of this patient.

It is perhaps needless to say that all the conventional drugs have been used at one time or another by the various physicians who have treated the patient. The dentists employed have been the best in the city. The case was worked up from the dermatologic standpoint by Dr. R. L. Sutton,[1] and published under the caption, "Periadenitis Mucosa Necrotica Recurrens." The diagnosis of pyorrhea was given by all the dental attendants, including Dr. Frederick Hecker, the author of a monograph on that subject.

1334 Rialto Building.

1. Sutton, R. L.: Jour. Cutan. Dis., 1911, xxix, 65.

Anthrax.—Anthrax was not a reportable disease in Pennsylvania prior to 1905 according to Dr. Andrew A. Cairns, chief medical inspector of the Philadelphia Bureau of Health. Previous to that time the death rate from anthrax was high. Since 1905 progress has been made in the treatment of the disease so that the death rate is now much less. In 1905 there were seven cases with one death; in 1906 nine cases with three deaths; in 1907 fifteen cases with four deaths; in 1908 four cases with three deaths; in 1909 nine cases with one death; in 1910 eight cases with two deaths; in 1911 two cases with one death; in 1912 ten cases with three deaths; in 1913 nine cases with three deaths; in 1914 nine cases with four deaths. For the first eight months of 1915 there were no deaths from anthrax in the city. In thirty-five cases recorded in the hospital for contagious diseases all the patients except five recovered.

THE TREATMENT OF CEREBROSPINAL SYPHILIS: THE OGILVIE TECHNIC

FORD EASTMAN, A.B., M.D.
Attending Surgeon, Hamot Hospital
ERIE, PA.

The trail of pioneer students in the last decade has led us into a wilderness of speculation and argument concerning the pathology and treatment of syphilis, especially of the late forms. Whether our combined attack with the old remedy and the brilliant new therapeutic weapon destroys the enemy or wins a truce, whether persistently negative findings in both serum and arachnoid fluid ever guarantee the death of the ultimate spirochete—these questions may be answered after forty years of wandering. Meanwhile certain facts in the pathology are becoming clear, and quite definite ideals of treatment may be held.

The underlying pathology of parasyphilis does not differ essentially from that of primary syphilis; but while a scarred foreskin is of no physiologic moment, a scarred optic nerve is a tragedy. We must probably, however, recognize both spinal and cerebral syndromes resulting from processes degenerative in type from the time of the first diagnostic symptoms. These perhaps follow years of nutritional disturbance, from relatively symptomless vascular disease long since quiescent, and are analogous in development to similar degenerations observed in primary anemia, plumbism and other toxemias in which syphilis can be excluded; or figuratively, to the gradual yielding of an aortic scar under hydraulic stress. These cannot be much benefited by any known treatment. Furthermore, remembering the sensitiveness of the cerebral cortex to even small traumatic cicatrices, it is not surprising that in paresis great or lasting improvement is obtained only in patients treated intensively in the very earliest stages.

Syphilis is generalized, including the cerebrospinal localizations, at latest soon after the appearance of the chancre; more often without it, and without the secondary reaction, than is generally believed. Whether trauma, intoxications, allergy, or some unknown phenomenon in the life cycle of the parasite later kindles into activity these foci in the nervous system, we do not know. It is perhaps significant that central nerve syphilis in the secondary stage before the discovery of salvarsan, as well as syphilis neurorecidive, has been observed most often in people acquiring syphilis late in life, when it is reasonable to suppose the normal slight ependymal permeability to biologic antibodies and specific drugs is diminished by early senile change. Whether the process is disseminated by metastasis or by extension alone from the primary localizations, we cannot be sure; we are sure that every syphilitic is a possible candidate for tabes or paresis until his last spirochete is killed.

Therefore, and because most effective in the early stages, treatment of the late forms begins, paradoxically, with the microscopic diagnosis of the chancre. In justified enthusiasm for the specific drugs, we are prone to forget the value of psychotherapy, never more essential than in the treatment of syphilis. The drug treatment is mercury by injection or inunction, and salvarsan intravenously, as intensive and continuous as may be without disturbing the general health, until clinically, serologically, and in the cytology and

biochemistry of the arachnoid lymph, there is no evidence of active disease. This means, for example, ten injections of mercury and six of salvarsan in about four months, followed, in the absence of symptoms, by two months' rest, when the tests should be made. If negative, and in the absence of symptoms, these should be repeated twice a year for several years. In tertiary syphilis moderate doses of iodids in addition are unquestionably of symptomatic benefit.

Since we failed of our hoped for *therapia magna sterilisans* with the single large dose of salvarsan, our careless and unscientific use of this drug, so potent for good or ill, is amazing. Evidence abounds that we achieve just as much with smaller and less frequent injections. The initial dose should not exceed 0.3 gm. The interval should rarely be less than ten days.

Latent syphilis with laboratory findings in the cerebrospinal fluid remaining strongly positive after one repetition of the course outlined should be treated intrathecally. Of this I am firmly convinced. The occasional patient with sufficient intelligent appreciation of his danger to offer his apparently healthy body as vicar of a diseased test tube is exactly the one whose activities it is most worth while to conserve.

The Wassermann test, unreliable and unstandardized as it is, is probably our best guide, and cerebrospinal syphilis should be treated locally, intravenously, or both, according to findings in serum and arachnoid fluid.

The Ogilvie method of arachnoid salvarsanization, in spite of its obvious advantages and excellent results, seems not to have won so wide a recognition as it deserves. By this technic, patients for whom general salvarsanization is no longer indicated avoid the discomfort, the probable harm, of large intravenous doses, as well as the repeated venous puncture. Dosage is accurate, the method economical of a drug expensive and at present difficult to obtain. The Ogilvie injection in my hands proves less disturbing to the physiologic economy than the Swift-Ellis treatment. Finally, this technic offers the more than academic advantage of answering the critics who believe the supposed benefit of subdural injections to result from the accompanying intravenous administration.

I have treated a baker's dozen cases of tabes and meningitis by Ogilvie's technic with about the same results as others have reported. Two of these I submit, not because they show the most brilliant result, for they do not, but because they illustrate points of especial interest, or perhaps justify radical views.

Wassermann tests are by Dr. T. P. Tredway, attending pathologist to Hamot Hospital, and Dr. E. C. Jagle, in Dr. Fordyce's laboratory.

Case 1.—Tabes. A saloon keeper, aged 51, until four years prior to being seen was a hard drinker, had a chancre twenty years previously, followed by mucous patches, for which he received no specific treatment. Eight years previously he had lightning pains and ataxia. In 1912, when he first consulted me, a condition of blurring and dim vision was improved by eight intravenous injections of salvarsan. During the last two years he has had detrusor insufficiency, emptying his bladder only once in twenty-four hours; loss of sexual power, and increasing ataxia. His disease has been characterized throughout by agonizing pains in the legs and about the waist. Until March, 1914, he received from me twelve intravenous injections of salvarsan and six courses of mercury by injection and inunction. During March he had four Swift-Ellis treatments which he thought were of no benefit. In fairness to the method I must admit that neosalvarsan was the drug used for these treatments. I regret that at this time I was not familiar with the pathology of the spinal fluid. After this he consulted other physicians, receiving osteopathic treatment and mercury injections through the summer and fall of 1914.

In February, 1915, when he consulted me again, he was on the point of giving up all activity. He could scarcely get about with the help of a cane, suffered with severe gastric crises and lancinating pains, which he controlled with 4 or 5 grains of morphin hypodermically every day. He showed the classical signs. February 11 the serum Wassermann was negative, the arachnoid fluid showing cells 45; globulin + + + ; Wassermann + + + with 0.5 c.c.

On this date he was given 0.25 mg. salvarsan subdurally, while suffering a gastric crisis. This dose was, under the circumstances, twice too large, and the reaction was severe and alarming. Ten days later he felt better than at any time during the previous two years.

March 1, feeling perfectly well, he received 0.1 mg., followed by a very mild reaction. March 23, returning to the large dose, he had 0.25 mg., which he bore without much distress. April 16 this injection was repeated, and the fluid phases were found to be normal.

April 20 he spaded in his garden for two hours and danced a little in the evening without mishap. His morphin he had by this time reduced to ¾ grain daily.

In July he complained of pains again, I believe in the hope of a larger morphin allowance, and received 0.25 mg. of salvarsan intraspinously. The fluid showed no abnormalities.

September 23. He walks wherever he pleases by day or night without a cane, empties his bladder without difficulty several times daily. He has not vomited for seven months, and has had practically no pains. He takes up to 1 grain of morphin daily, "because he is nervous without it." He can stand with his eyes closed, which he could not do two years ago. The pupil and tendon reflexes have not returned, and his sexual power is gone.

This man's process advanced steadily and fairly rapidly during three years until he was almost a hopeless bedridden morphinomaniac, in spite of systemic treatment as strenuous as anyone could be asked to endure, besides four Swift-Ellis injections. Tests of his fluid were characteristic of active disease. For the past seven months he has enjoyed very fair health and an ordinarily active life. By his own effort he reduced his morphin by more than three quarters. He has received five intrathecal injections of salvarsan by the Ogilvie technic; no other treatment of any kind, medicinal, mechanical or educative. His cerebrospinal fluid is normal.

Case 2.—Latent syphilis. A lawyer of 35, single and of good habits, consulted me in 1912 with the history of a possibly specific sore without secondaries twelve years previously, and a positive serum Wassermann. During the next eighteen months he had nine intravenous injections of salvarsan and four courses of thirty mercury inunctions. The Wassermann remained triple plus, the patient "in smiling health, in spite of the disease and in spite of the treatment."

In February, 1914, the pupils became unequal. He received mercury injections until May, then two intravenous injections of salvarsan, no further treatment until July, when he had pains and tingles in hands and forearms and across the back, and the pupil responses to light became sluggish. Mercury injections were resumed until September, when he had one Swift-Ellis treatment, 20 c.c. serum with 10 c.c. saline. Meningism required rest in bed for ten days. At this time the serum Wassermann was doubtful, the fluid showed cells 35, globulin abundant, Wassermann complete with 0.2 c.c. A second Swift-Ellis treatment was followed by blurring vision (Herxheimer reaction, or temporary paresis from irritation?). Dr. I. J. Dunn reported normal fields and disks.

October 15, 1914, this patient was referred to Dr. J. A. Fordyce, who found the pupil changes and also noted exaggerated tendon reflexes in the left leg. He advised a series of eight intravenous injections, the patient to report to him after this course.

January 15, by Dr. Fordyce: Patient profoundly hypochondriac; serum Wassermann negative, cells 4, globulin excess very marked, inhibition complete with 0.4 c.c., the important phases thus slightly affected by two Swift-Ellis injections and eight intravenous. No change in the signs. Patient received 0.25 mg. intraspinally, by Dr. Fordyce, followed by a moderate reaction lasting four days. In February this injection was repeated by Dr. Fordyce, the phases in the fluid showing some improvement.

Since then this patient has been in vigorous mental and physical health. He has received at my hands three subdural injections of 0.25 mg. each, at eight-week intervals. The serum Wassermann remains negative; that in the fluid has become weaker by almost perfect arithmetical progression with each injection, to practically normal. The patient has no symptoms; the signs are perhaps slightly improved.

It is but fair to credit the clinical improvement under the Ogilvie injections to the psychic effect of kindly reassurance by a wise and recognized authority, for the real subjective symptoms cleared up under Swift-Ellis and intravenous injections at my hands, the signs remaining stationary. For the local treatment may justly be claimed the return to normal of the spinal fluid, for I do not believe psychotherapy ever rendered a Wassermann negative. From the complete arrest of the process in this case it seems reasonable to believe that if local treatment had been instituted before the appearance of clinical signs and symptoms, their onset might have been postponed, perhaps indefinitely, and the patient spared a psychical upset which made him useless for several months.

My field is too small to yield any large harvest of conclusions. Ogilvie's study seems to me the great advance in the therapy of syphilis since Ehrlich's discovery; his technic the method of choice in the local treatment of cerebrospinal forms of this disease.

SOME CLINICAL MANIFESTATIONS OF FOCAL INFECTIONS

SVERRE OFTEDAL, M.D.
FARGO, N. D.

Focal infection as a definite factor in diagnosis and treatment has become well established, through the work of Rosenow, Billings, and others; it is no longer in the experimental stage. The clinical manifestations come under the eye of the observing practitioner almost daily. In our clinic at St. Luke's Hospital it has become a matter of routine to search carefully for foci of infection and to demonstrate their presence wherever possible. Some interesting observations have come to light which it seems might be worthy of publication. The following cases are cited, because each seems to illustrate a certain phase or phases of the subject:

CASE 1.—A. T., a boy of 12, came to my office in July, 1912. He had been suffering for several years with chorea, which, in spite of the usual treatment, rest in bed, Fowler's solution, etc., had been growing more and more severe. The eyes were continually rolling from side to side, the head was always changing position, and other muscles of the body were jerking constantly. General nutrition was poor; there was a slight mitral lesion, and a rather indefinite history of sore "throat." Tonsils were of the embedded variety and apparently not enlarged. Examination was otherwise negative. The tonsils were extirpated and the left was found to contain pus from which a streptococcus was isolated. The boy was put to bed, Fowler's solution being prescribed in increasing doses. In five weeks twitchings had all ceased, and patient seemed to have made a perfect recovery.

The supplementary treatment was given because it was deemed unjustifiable to withhold any measure that might contribute to the patient's recovery. Since this treatment had been given previously without effect, however, there seems to be little room for doubt that the real cause for recovery lay in the extirpation of the tonsils, the focus of infection.

CASE 2.—R. G., girl, aged 13, entered the hospital in August, 1915. She had been subject to attacks of tonsillitis for several years. About a year ago one of these attacks was associated with rheumatic pains and swelling of the joints, which, however, subsided, being followed by several other severer attacks at intervals until about seven weeks ago, when she entered the hospital. At that time the child was greatly emaciated, and had the typical appearance and symptoms of a severe endocarditis. The tonsils appeared to be innocent, being of apparently normal size and color. For several weeks the temperature ranged between 102 and 104 F., salicylates and other medication being given without any apparent effect. A bacteriologic examination was then made of the tonsils. From the crypts of the left tonsil was obtained a slight amount of pus, which yielded a pure culture of a green-producing streptococcus under anaerobic cultivation. It was decided that the tonsils must be removed, in spite of the poor condition of the patient. Under local anesthesia this was successfully accomplished. Both tonsils were of the size of a large hazelnut; the right was apparently normal in structure, but the left contained considerable quantities of pus. The left tonsil was emulsified under aseptic precautions and the emulsion suspended in salt solution, injected into three rabbits, varying quantities being injected intravenously. The first animal died of anaphylactic shock shortly after injection; the second died about eight hours after injection with every symptom of an overwhelming septicemia, streptococci being isolated from the blood in great numbers. The third rabbit had been given a very small dose and showed no noticeable symptoms until about two weeks later, when an inflammation of one of the joints developed. The following few days the animal grew gradually worse, and was chloroformed. There was considerable fluid in the pleural, peritoneal and pericardial cavities, the latter containing a flaky deposit. The heart was dilated and flabby, and the mitral valve showed retraction and a small hemorrhage. From the blood and serous fluids was isolated the *Streptococcus viridans*.

Meanwhile, the day following extirpation of the tonsils, the patient complained of a severe pain over the right kidney. The urine, which had hitherto been normal, showed the findings of an acute hemorrhagic nephritis. On cultivation, under great precautions, a pure culture (anaerobic) of a green-producing streptococcus was obtained, corresponding in every way to that obtained from the left tonsil. A vaccine was prepared and given at intervals of six days. After two injections the urine had again become normal, while the temperature gradually diminished.

This case is given in detail because it seems to demonstrate conclusively the source of the infection. These two cases also are illustrations of the so-called "embedded" tonsils whose innocent appearance will often deceive even the specialist.

CASE 3.—Mrs. M, aged 31, entered the hospital in June, 1915. About four weeks before, the patient was attacked with pain and swelling of certain joints, particularly of the fingers, wrists, ankles and toes. About a week later she observed a breaking out of the skin. She consulted a physician, who prescribed the usual treatment for rheumatism, but without much improvement. Patient finally entered the hospital, and was found to be suffering with acute articular

rheumatism, associated with a rather severe erythema multiforme. A careful examination was made for a primary focus of infection. The only positive findings were two adjoining teeth (anterior molars) which had been carefully filled, but which were a little loose and slightly tender, yet had given no serious trouble to the patient. It was advised that these be extracted, but consent of the patient could not be obtained for a week, during which time large doses of salicylates were given, with no apparent effect whatever. The patient finally decided to part with the teeth, which were promptly extracted. That night the patient enjoyed a comfortable sleep for the first time since the illness began. In three weeks she left the hospital perfectly cured.

Cultures made from the alveolar abscess found at the root of one of the teeth yielded a pure culture of a streptococcus, having a slightly hemolyzing colony and growing in short chains.

Case 4.—Miss J. J., aged 18, came to the hospital in July, 1915, complaining of a severe headache, and pain in the left knee and over the heart. Patient had had attacks of pain over the heart previously, also headaches for some time, but had not before been troubled with "rheumatism." The knee was found to be slightly swollen and tender; there was a murmur over the apex; the pupils were considerably distended. Temperature 101. Examinations of teeth, tonsils and nose were negative. She was referred to a specialist for a careful examination of the sinuses, and these were found to be apparently normal. A daily inspection of the throat was made, with no results until one day when the patient said she felt somewhat better. A considerable quantity of a greenish, thick pus was found to be discharging down the posterior pharyngeal wall. Cultures were made and a streptococcus isolated, from which a vaccine was prepared. Patient began to improve after the first injection of the vaccine, and after five doses had been given she had apparently made a complete recovery.

This case emphasizes the fact that a focus of infection may often be overlooked, even by a competent specialist, when seated in the upper sinuses. A daily inspection for discharging pus seems to be the only recourse in such cases.

HEMATEMESIS FOLLOWING APPARENT ACUTE INDIGESTION

REPORT OF A CASE OCCURRING IN AN INFANT

George V. Duffy, M.D., Woodhaven, L. I.

J. F., a male child, aged 2 months, weighed at birth 6½ pounds. Though of small size he was apparently healthy. He was bottle fed from the beginning as the mother (quintipara), having secondary anemia from severe postpartum hemorrhage after each delivery, was never able to nurse.

The present illness began during the hot days of August, with vomiting, diarrhea, and fever. The abdomen was distended, the child was very restless and cried continually. After the second day the temperature became normal, vomiting ceased, the bowels were constipated; abdominal distention and pain alone remained. On the fourth day the child passed into a state of semiconsciousness (respirations were interrupted and of the Cheyne-Stokes type). On the fifth day he passed a large watery stool; the distention was much less, the respirations became quiet and regular, the condition of stupor disappeared, the eyes appeared bright, and a better color returned to his skin. About 3 p. m. on the fifth day the child became suddenly weak and pale but in a few minutes appeared much better. About 4:30 p. m. he vomited about a teaspoonful of dark brownish fluid. The child, however, continued apparently to gain strength until 6:30 p. m. when it suddenly vomited a very large amount of blood, dying while vomiting.

5 Forest Parkway.

Therapeutics

THE MORPHIN HABIT

(Concluded from page 1817)

OBJECTS OF TREATMENT

1. To stop the drug.
2. To prevent pain and cause sleep.
3. To increase all secretions.
4. To sustain the strength.
5. To support the heart.
6. To teach self-control.
7. To promote nutrition and general health.

These are the main objects that one must keep in mind, and they also represent some of the difficulties in the cure of the morphin habit.

DETAILS OF METHODS OF TREATMENT

Towns-Lambert Method.—The details, as described by Dr. Lambert, are as follows:

The morphin patient is given five compound cathartic pills and 5 grains of blue mass. If these have not acted in six hours, he is given a saline cathartic. After three or four free movements, he is then given in three divided doses at half-hour intervals, two-thirds or three-fourths of his total twenty-four hour morphin or opium dose. The drug is given in the way he usually takes it. After the second dose, Lambert cautions the physician to study the patient carefully, as a few patients cannot comfortably take more than this amount, and should not receive the third dose of morphin. Beginning at the same time that the first dose of morphin is given, 6 drops, from a medicine dropper, of the belladonna, xanthoxylum and hyoscyamus mixture above described are given, and this dose is repeated every hour for six hours. At the end of six hours the dose is increased by 2 drops. This belladonna mixture is then continued every hour, day and night, continuously throughout the treatment, increasing 2 drops every six hours until the dose has reached 16 drops; this 16-drop dosage is then continued. The belladonna drops are diminished, or discontinued, at any time that the patient shows symptoms of belladonna poisoning, which is evidenced by dilated pupils, flushed face, dry throat, or "a peculiar incisive and insistent voice and an insistence on one or two ideas." It would seem as though the dilated pupils and dry throat would be present early in almost every case. If the belladonna treatment has been stopped, it is again begun at a reduced dosage as soon as the symptoms have subsided. If there is idiosyncrasy against belladonna, it will be shown in the first six or eight hours, and the dose must then be diminished. If 16 drops, the full dose, given for twelve consecutive hours do not cause dryness of the throat, the dose should be increased to 18, and to 20 drops per hour, and when the throat is dry, the dose should be reduced.

Ten hours after the first dose of morphin, the patient is again given five compound cathartic pills and 5 grains of blue mass. If they do not act in eight hours, a saline cathartic should be given. When the bowels have acted thoroughly, one half of the dose of morphin given at first should be given. As just stated, the belladonna drops are still being continued, and ten hours after the second dose of morphin has been given, that is, about the twenty-eighth hour of treatment, five more compound cathartic pills are given and 5 grains of blue mass, followed again by a saline if the

bowels do not act in eight hours. After the bowels have thoroughly acted from the last dose of cathartics, the third dose of morphin is given, which should be one sixth of the first dose. It is stated that usually this will be the last dose of morphin required.

Ten hours after the third dose of morphin, that is, at about the forty-sixth hour, five compound cathartic pills and 5 grains of blue mass are again given, followed by saline, if needed, and at this time, if not before, a bilious green stool should appear. When this appears, usually about eighteen hours after the third dose of morphin or about the fifty-sixth hour of treatment, 2 ounces of castor oil are given to clean out the intestine. Sometimes, Lambert states, it is necessary to continue the belladonna mixture over one or two more cathartic periods before giving the oil.

During the last bowel-moving period the patients are the most uncomfortable, and their excessive nervousness and discomfort may be controlled by codein, "which can be given hypodermically in 5-grain doses and repeated, if necessary; or some form of valerianates may help them." It would seem very doubtful if valerianates could be mentioned in the same category with a 5-grain dose of codein. The valerianates have never been shown to have any activity whatsoever.

At about the thirtieth hour of treatment, the patient should be stimulated with strychnin or digitalis, or both, every four to six hours. The amount of strychnin is not mentioned; neither is the amount nor the preparation of digitalis. Digitalis should rarely be given at four-hour intervals. This cardiac stimulation is left entirely to the judgment of the physician who is caring for the patient.

It is stated that some patients cannot tolerate the codein, as it causes poisoning, and urticarial rash, etc. Such patients may receive ethyl-morphin hydrochlorid, and Lambert thinks that the latter is twice as strong in its activity as codein, and he thinks the dose should be "2 or 3 grains, or less." The dosage of this drug, according to New and Nonofficial Remedies, is from one-quarter to 1 grain. The codein or dionin, whichever is given, should be stopped as soon as possible after the castor oil has acted, although it may be given during the succeeding twenty-four hours if necessary, but it should not be continued more than forty-eight hours, as they will acquire this habit, or return to the morphin habit.

Joint and other pains, and bone and muscle aches, Lambert says, "can sometimes be relieved by hypodermics of some form of ergot and strychnin, sometimes by massage, sometimes by sodium salicylate, sometimes by a salicylic compound combined with some of the coal-tar products, such as antipyrin or acetphenetidin; and they can always be eased by codein or dionin. The addition of codein to these coal-tar products increases their analgesic effect." Of course, it does, and it would seem almost inexcusable, if morphin is being withdrawn, to continue codein or ethyl-morphin hydrochlorid for more than one or two doses. The choice of these drugs is apparently left to the physician in charge of the patient. It would seem that the more drugs, the worse for the patient. All coal-tar products are depressant and are dangerous for a heart, especially after it has been through the trials it must go through in the two or three days of this treatment.

Insomnia, Lambert says, may be treated sometimes with bromids, sometimes with chloral or some other hypnotic. Veronal, he says, has caused much depression. Any of these hypnotics must cause some depression. He states that as soon as the patient is up and about, muscular fatigue caused by regular exercise makes him sleep, and usually such exercise can be taken at the end of a week.

The Pettey Method.—On the first day of the treatment the patient may take his usual dose of morphin, but he must go without his dinner and supper. Pettey's cathartic prescription, which contains atropin and strychnin as above described, is divided into four doses and placed in capsules. The patient takes one of these capsules every two hours, beginning at 4 p. m. The following morning he receives no nourishment and no morphin until his bowels have thoroughly moved. To insure that they do move, about 5 a. m. the next morning he is given one-twentieth grain of strychnin hypodermically (although he already has had one-fourth grain of strychnin since 4 p. m. the day before). Half an hour later he is given 2 ounces of castor oil or the contents of a bottle of magnesium citrate. Both the strychnin and the oil or saline should be repeated every two hours until the intestinal canal has been thoroughly emptied, and no morphin should be given during this time. It would certainly seem as though a morphin patient was very tolerant to strychnin, and it may be that he is sustained by this large dose of strychnin during the first period of going without his morphin.

After the bowels have freely moved, and the craving for morphin becomes insistent, the patient should be given from one half to two thirds of his usual dose of morphin at the same intervals at which he has been accustomed to take the drug. After this free purging he may have plenty of food regularly, provided he eats nothing for six hours before he begins his second purgative treatment, which should be at the end of forty-eight hours from the first. The cathartic capsule should be given in the same way as on the first day. The morphin may be continued in reduced dose, just sufficient to keep the patient comfortable, until the last dose of the cathartic capsule has been given, when it it is stopped, and no more opiate should be given. From six to eight hours after the second purgative course has been completed, strychnin hypodermically and the oil or saline should be repeated as before. As soon as the patient feels the need of the morphin after this second free purging, instead of morphin or an opiate, he is given $\frac{1}{200}$ grain of scopolamin hypodermically, and this is repeated in thirty minutes. If the patient does not sleep after the second dose, a third may be given in half an hour or an hour, which may be of the same amount, or double the amount, depending on the effect. This large dosage of scopolamin will cause either sleep or a mild intoxication. In either case the patient will not suffer. As soon as he wakes, he is given another $\frac{1}{200}$ grain of scopolamin, and this atropin intoxication should be repeated, if necessary, to keep the patient free from pain, for from thirty-six to forty-eight hours after it was begun. It should then be stopped. During the scopolamin period and for twenty-four hours afterward, Pettey gives 20-grain doses of sodium thiosulphate every two hours, which he thinks supplements the effect of the calomel purgative.

Convalescence is established on the fifth to the sixth day, when medication should cease, except treatment aimed at improving the general condition of the patient. During the treatment a weakened circulation is treated by Pettey by giving spartein sulphate in doses of 2 grains, every four to six hours.

Sceleth Method.—Patients treated by this method are first given a saline cathartic, and then the mixture of scopolamin, pilocarpin, ethyl-morphin hydrochlorid and cascara sagrada in the combination described previously. The dose varies according to the amount of morphin the patient is taking. When more than 10 grains of morphin per day are being taken, Sceleth gives 60 minims every three hours, day and night, for six days. On the seventh day the dose is reduced to 30 minims; on the eighth day to 15 minims, and on the ninth day 15 minims three times a day instead of every three hours day and night. On the tenth day this treatment is stopped, and strychnin nitrate, one-thirtieth grain, three times a day is substituted. On the eleventh day the strychnin is reduced to one-sixtieth grain three times a day, and this is continued for a week. During the first five days he gives a very light diet, but liquids freely.

Patients who are taking less than 10 grains of morphin a day start with a dose of 30 minims of the mixture; and if less than 5 grains, 15 minims.

This treatment represents the substitution of ethyl-morphin hydrochlorid for morphin; the fighting of the morphin depression by scopolamin; the necessary promotion of secretions by pilocarpin, and the necessary laxative treatment by cascara. In other words, *this is apparently the simplest and most rational treatment of the three.*

During the first three days of the treatment the patients of course are sleepless, and they may vomit; but these symptoms occur with any treatment. If the pulse goes below 40 or above 120 per minute, the scopolamin mixture is stopped, and if there are any signs of collapse, one-half grain of ethyl-morphin hydrochlorid, or one-quarter grain of morphin is given hypodermically. The same is true of any treatment; if collapse is in evidence, morphin must almost invariably be given.

Sceleth says that in only about 4 per cent. of the cases is there scopolamin delirium, and when such a condition occurs the scopolamin may be omitted from the mixture for a few doses and then added in small doses. He further says what is very laudable, namely, to use no other drugs during the treatment. By the fifth day the patient generally has no further desire for his morphin and is ready for food, and may have a ravenous appetite and gain weight rapidly.

Sceleth very wisely says that if the cause that developed the morphin habit is still present, these patients are likely to relapse; if the cause that developed the habit has been removed, the patients are generally permanently cured. Consequently, if the cause that developed the habit has not been removed, it is a subject for the most careful therapeutic and, if necessary, surgical consideration. There certainly is little use in putting a patient through the serious ordeal for the cure of the morphin habit if recurrent severe pain is sure to occur.

The physician is urged to study the action of the drugs employed in the treatment of the morphin habit, and it is recommended that he first try the Sceleth method, which would seem to be the least dangerous, to cause the least hardship, and probably has as good a percentage of cures as any other treatment.

THE COCAIN HABIT

Often a patient who has the cocain habit also takes morphin; therefore frequently the two habits must be treated at once. In any case the cocain is stopped abruptly, the same elimination by free catharsis is necessary, and supporting treatment, especially with strychnin, is important. The combination of the cocain and morphin habits is perhaps the hardest one to cure, and Lambert says that as soon as the morphin is reduced the patients become delirious, and often almost unmanageable.

Any one of the methods described for the cure of the morphin habit may be used to cure the double habit, as just stated, the cocain being stopped immediately.

SYMPTOMS OF COCAIN POISONING

The local anesthetic symptoms need not be described. The symptoms after absorption, in a patient who is not used to the drug, vary greatly; many are excited mentally and are very loquacious, some may become slightly exalted or even delirious. The heart and respiration become more rapid, the pupils may dilate, and there may be some headache. The reflexes are likely to be exaggerated. There may be some slight trembling. Other patients are prostrated and become very faint, and even may become collapsed, if too much cocain has been absorbed. Vomiting may occur, but is perhaps rarely present unless the cocain is applied accidentally or intentionally to the pharynx, when the sensation of a foreign body in the pharynx, due to the anesthetized area, may cause reflex vomiting. The primary stimulation of cocain is not dissimilar to that of atropin.

Individuals who take the drug frequently, and become accustomed to it, receive mental stimulation from the cocain not dissimilar to that caused by caffein. They also, before they have been injured by the drug, may have more muscle endurance, and are fatigued less easily and can abstain longer from food without depression. Part of this action is doubtless due to the increased activity of the heart with some rise in blood pressure, and to the stimulation of the medulla oblongata and the spinal cord, all causing increased nervous tension. Sooner or later, depending on the particular individual, reaction sets in, the blood pressure falls, and the person becomes irritable, languid and weak.

In animals at least, and probably to a large extent in man, the cocain is almost entirely destroyed in the system, only a small amount being excreted by the kidneys.

Cocain is a poison. It more or less interferes with the secretions, digestion and finally nutrition. The cocain habitué becomes sleepless, nervous and tremulous, and may have hallucinations or become really insane. As stated, the main danger from the withdrawal of the drug is cerebral excitation and cardiac weakness.

(To be continued)

School Inspection.—In seventeen of the twenty-five states there is no organized health inspection of rural schools under competent authorities. In Idaho, Utah, Colorado, Pennsylvania, New Jersey and Virginia there is such an organized system, and the statistics for the rural schools are kept distinct from those of the city schools. In Maine and Rhode Island city and county records are listed together, a distinct disadvantage in determining the condition of the nation's schools. In no states other than these mentioned is there health inspection for the rural districts. In a commonwealth so advanced in educational matters as Massachusetts there is no health inspection of rural schools.—Dr. Philip Sumner Spence, *Public Health*, September, 1915.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

ETHYL BROMIDE (See N. N. R., 1915, p. 25).—The following non-proprietary preparation has been accepted:

Ethyl Bromide Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

HOMATROPINE HYDROCHLORIDE (See N. N. R., 1915, p. 57).—The following non-proprietary preparation has been accepted:

Homatropine Hydrochloride Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

SODIUM CACODYLATE (See N. N. R., 1915, p. 49).—The following non-proprietary preparation has been accepted:

Sodium Cacodylate Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

IODOTHYRINE (See N. N. R., 1915, p. 219).—The following dosage form has been accepted:

Iodothyrine Tablets, 3 grains.—Each tablet contains iodothyrine 3 grains. Prepared by Farbenfabriken, vorm. Friedr. Bayer & Co., Leverkusen, Germany (The Bayer Company, Inc., New York).

THYRESOL (See N. N. R., 1915, p. 277).—The following dosage form has been accepted:

Thyresol Pearls, 5 grains.—Each pearl contains thyresol 5 grains. Prepared by Farbenfabriken, vorm. Friedr. Bayer & Co., Leverkusen, Germany (The Bayer Company, Inc., New York).

THEOCIN-SODIUM ACETATE (See N. N. R., 1915, p. 375).—The following dosage form has been accepted:

Theocin-Sodium Acetate Tablets, 1½ grains.—Each tablet contains theocin-sodium acetate 0.1 Gm. (1½ grains). Prepared by Farbenfabriken, vorm. Friedr. Bayer & Co., Leverkusen, Germany (The Bayer Company, Inc., New York).

EMETINE HYDROCHLORIDE (See N. N. R., 1915, p. 107).—The following dosage forms have been accepted:

Ampuls Emetine Hydrochloride, Mulford, 1/12 grain.—Each ampule contains emetine hydrochloride 0.005 Gm. (1/12 grain). Prepared by H. K. Mulford Co., Philadelphia.

Ampuls Emetine Hydrochloride, Mulford, 1/3 grain. Each ampule contains emetine hydrochloride 0.02 Gm. (1/3 grain). Prepared by H. K. Mulford Co., Philadelphia.

Ampuls Emetine Hydrochloride, Mulford, 2/3 grain.—Each ampule contains emetine hydrochloride 0.04 Gm. (2/3 grain). Prepared by H. K. Mulford Co., Philadelphia.

SODIUM CACODYLATE (See N. N. R., 1915, p. 49).—The following dosage forms have been accepted:

Ampuls Sodium Cacodylate, Mulford, 1½ grains.—Each ampule contains sodium cacodylate 0.1 Gm. (1½ grains). Prepared by H. K. Mulford Co., Philadelphia.

Ampuls Sodium Cacodylate, Mulford, 3 grains.—Each ampule contains sodium cacodylate 0.2 Gm. (3 grains). Prepared by H. K. Mulford Co., Philadelphia.

QUININE AND UREA HYDROCHLORIDE (See N. N. R., 1915, p. 260).—The following dosage form has been accepted:

Ampuls Quinine and Urea Hydrochloride, 1%, Mulford.—Each ampule contains 5 Cc. of a sterile 1 per cent. solution of quinine and urea hydrochloride. Prepared by H. K. Mulford Co., Philadelphia.

MERCURIC SUCCINIMIDE (See N. N. R., 1915, p. 201).—The following dosage form has been accepted:

Ampuls Mercury Succinimide, Mulford, 1/6 grain.—Each ampule contains mercury succinimide 0.01 Gm. (1/6 grain). Prepared by H. K. Mulford Co., Philadelphia.

CALCIUM PEROXIDE (See N. N. R., 1915, p. 230).—The following non-proprietary preparation has been accepted:

Calcium Peroxide, P. W. R.—Manufactured by Powers-Weightman-Rosengarten Co., Philadelphia.

MAGNESIUM PEROXIDE (See N. N. R., 1915, p. 231).—The following non-proprietary preparation has been accepted:

Magnesium Peroxide, P. W. R.—Manufactured by Powers-Weightman-Rosengarten Co., Philadelphia.

SODIUM PEROXIDE (See N. N. R., 1915, p. 232).—The following non-proprietary preparation has been accepted:

Sodium Peroxide, P. W. R.—Manufactured by Powers-Weightman-Rosengarten Co., Philadelphia.

STRONTIUM PEROXIDE (See N. N. R., 1915, p. 233).—The following non-preprietary preparation has been accepted:

Strontium Peroxide, P. W. R.—Manufactured by Powers-Weightman-Rosengarten Co., Philadelphia.

ZINC PEROXIDE (See N. N. R., 1915, p. 234).—The following non-proprietary preparation has been accepted:

Zinc Peroxide, P. W. R.—Manufactured by Powers-Weightman-Rosengarten Co., Philadelphia.

SODIUM PERBORATE (See N. N. R., 1915, p. 277).—The following non-proprietary preparation has been accepted:

Sodium Perborate, P. W. R.—Manufactured by Powers-Weightman-Rosengarten Co., Philadelphia.

FORMIC ACID (See N. N. R., 1915, p. 141).—The following non-proprietary preparation has been accepted:

Formic Acid, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

AGAR AGAR (See N. N. R., 1915, p. 22).—The following non-proprietary preparations have been accepted:

Agar Agar Powder, Merck.—Agar Agar in the form of a coarse powder. Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

Agar Agar Shreds, Merck.—Agar Agar in the form of shreds. Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

BERBERINE HYDROCHLORIDE (See N. N. R., 1915, p. 58).—The following non-proprietary preparation has been accepted:

Berberine Hydrochloride, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

FLUORESCEIN (See N. N. R., 1915, p. 132).—The following non-proprietary preparation has been accepted:

Fluorescein, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

MERCURY CYANIDE (See N. N. R., 1915, p. 198).—The following non-proprietary preparation has been accepted:

Mercury Cyanide, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

POTASSIUM MERCURIC-IODIDE (See N. N. R., 1915, p. 203).—The following non-proprietary preparation has been accepted:

Mercury and Potassium Iodide, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

TYPHOID VACCINE (See N. N. R., 1915, p. 324).—Swan-Myers Company, Indianapolis.

Swan's Typhoid Bacterin (No. 44) (Prophylactic).—Marketed in packages of three 1 Cc. vials, of which one contains 500 million, and the other two each 1 billion killed typhoid bacilli; also in packages of six 1 Cc. vials, two of which contain each 500 million, and four vials contain each 1 billion killed typhoid bacilli.

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THE INHERITANCE OF ABNORMALITIES

Modern science has clearly demonstrated that many conditions once ascribed to hereditary factors can no longer be regarded as inherited. The overwhelming majority of the cases cited as instances of the influence of maternal and paternal impressions on bodily features are clearly not cases of inheritance in the strict sense; for the "impression" has almost always been reported to occur after conception. Mutilations are no longer believed to be capable of transmission by inheritance. More significant than all of these instances, however, is the demonstration, due to the modern science of bacteriology, that there is no such thing as the true inheritance of specific infectious diseases. The accepted etiologic rôle of micro-organisms in these pathologic conditions has excluded the possibility of a hereditary smallpox, tuberculosis or syphilis, for example. At first, when the untenability of the older views became apparent, it was customary to refer to the inheritance of a "tendency" to these diseases, of a "weakened constitution" especially predisposing to them. When the true mode of transmission of the infections became better understood, it was easy to see that in some cases, at least, what is "inherited" is an unfavorable hygienic environment—an opportunity for exposure to the dangerous surroundings that had been the real menace to the victims of a previous generation, rather than disease itself.

To say that "specific infections are not inherited, but are of postconceptional acquirement" does not by any means imply that there is no inheritance whatever of conditions which have a pathologic significance. Familial inheritance of abnormal conditions is too common to have escaped notice. The growing interest in the scientific aspects of heredity and the development of a real experimental science of genetics have put new enthusiasm into the study of human anomalies of all kinds — to peculiarities or perversions of anatomic form, temperament, mentality and metabolism. The investigation of the mendelian and other theories of inheritance has disclosed so much of importance that it has become popular among medical writers to subject instances of alleged "constitutional tendencies" to the critical analysis of succession demanded by the newer hypotheses.

Certain qualities seem to be transmitted from parent to offspring either completely or not at all. The manner in which such characteristics are transmitted follows a plan, in many instances, familiarly known as Mendel's law. This postulates certain characters as dominant and others as recessive. If both characters relating to a particular part or function are present together in one individual, the latter will exhibit the dominant type. Many characters can be brought under this law; but in some cases the mendelian principle seems to fail. Thus in man the progeny of a cross between a white and a black race are more or less intermediate between the two in color. The offspring are frequently of various degrees of brownness, rather than definite black or white individuals.

Enough has been indicated to suggest the importance of considering supposed hereditary defects from the standpoint of these modern hypotheses. Among recently considered cases belongs the constitutional tendency to brittle bones. Weakness of the long bones may arise from a number of pathologic conditions affecting the bones, but the typical fragilitas ossium or osteopsathyrosis runs through families. An examination of a large number of family histories by Davenport and Conard[1] shows clearly that heredity in osteopsathyrosis is typically direct, that is, the factor which determines the irregular bone formation is a dominant one. The view that it is due to "some disturbance of metabolism of the mother" is disproved by the instance of twins, described by Schwarz and Bass; one twin showed osteopsathyrosis at birth while the other did not. The rare exceptions to the rule that a generation is not skipped are explained by the well-known principle of imperfection in dominance or possibly by a lack of knowledge of an infantile condition of a parent. That osteopsathyrosis depends on a single dominant factor is further indicated by the fact that the proportion of children in an affected fraternity that shows osteopsathyrosis is approximately half—actually 55 per cent. According to these investigators of the Eugenics Record Office, Davenport and Conard, the presence of biotypes can be recognized. In some families the slightest pressure results in fracture; in other families the bones are fairly resistant. The commonest bone to break is the femur; but in some families the humerus seems especially weak, and in still others the clavicle is frequently broken. Thus, associated with the imperfect bone development are special family traits which modify the result.

Expressing the outcome of these studies in a somewhat different way, it appears that of a parent exhibiting the features of hereditary fragility of the bones in early life, at least half of the children will be similarly affected. But if neither parent, though of affected

1. Davenport, C. B., and Conard, H. S.: Hereditary Fragility of Bone, Proc. Nat. Acad. Sc., 1915, i, 537.

stock, has shown the tendency, then expectation is that none of the children will have brittle bones. Moreover, when a parent is affected, it is possible that his children will show the tendency at about the same time of life, in the same bones and to the same degree as he himself showed it. Davenport and Conard state that an association of osteopsathyrosis with blue sclerotics has often been pointed out. The condition of blue sclerotics also appears to be a dominant trait.

In similar ways the relation of digital abnormalities to pedigree has been investigated by Manson.[2] Such peculiarities as syndactylism and polydactylism require no special skill in diagnosis, so that statements regarding them are likely to acquire a considerable degree of accuracy. Manson has obtained the statistics of the descendants of a man living in Wales about the beginning of the nineteenth century who was affected with webbing of the third and fourth fingers of the hand, and had six toes on each foot. Of the sixty-four descendants investigated, twenty-seven were affected with similar abnormalities, thirty-three were unaffected, and four were doubtful. Both the syndactyly and the polydactyly appear as a dominant character. The abnormality appears in the offspring of an affected parent, and either sex may transmit it. The offspring of unaffected parents are always free from it.

In the family here reported on, sesamoid bones are present in the majority of the affected hands at the second, third and fourth metacarpophalangeal joints where they are not usually present in normal hands. Inasmuch as these bones are frequently present in embryonic hands, Manson infers that in the affected hands the processes of absorption are below normal.

THE ACIDITY OF THE GASTRIC SECRETION

It is somewhat surprising that the remarkable contributions to physiologic science by William Beaumont were not promptly followed by a succession of studies in the same field. For many years—almost to our own generation—writers on medical subjects related to digestion were content to quote the findings and the conclusions of the pioneer American physiologist as the final verdict. Nevertheless, it was clearly understood in Beaumont's time that his statements were by no means to be implicitly adopted. Thus we read: "The rapidity of digestion, as the author himself shows, varies greatly according to the quantity eaten, the amount and nature of the previous exercise, the interval of the preceding meal, the state of health and of the weather, and also the state of the mind. But in scarcely any of the experiments have these conditions been carefully noted." [3]

Good clinical usage should be based on sound physiology. Recently a revival of interest in gastric physiology has occurred, beginning with the widely quoted work of the Russian physiologist Pawlow. Carlson of Chicago has contributed a series of fundamental observations which have been referred to from time to time in THE JOURNAL. Attention has been directed to the fact pointed out by Boldyreff[4] that the actual acidity of the human gastric juice is considerably greater than that which the customary figures reported after the examination of a test meal would lead one to surmise. In conformity with this, Carlson[5] has also demonstrated, notably in two cases of gastric fistula in man, that normal human gastric juice (appetite secretion), when secreted above a certain minimum rate, shows a practically constant total acidity of nearly 0.5 per cent. hydrochloric acid, or the same as the gastric juice of the dog. According to Carlson, this uniform and constant acidity is true for man only in regard to the "appetite, digestion and hunger juice," secreted at a fairly high rate. He states that we must take cognizance of the equally important fact that the normal gastric mucosa is capable of secreting a juice of submaximal acidity. The contents of the "empty" stomach, and the continuous or hunger secretion (when the secretion rate is low) have a uniformly lower acidity than the appetite juice. The total acidity of contents of the "empty" stomach is about 0.2 per cent., in terms of hydrochloric acid, a figure frequently given by clinicians as the acidity of the pure gastric juice of normal persons. When the secretion rate becomes higher, the acidity increases, but never exceeds that of the juice which flows under the stimulus of the appetite.

According to the foregoing facts, the normal human gastric juice, provoked by a suitable stimulus, is equal in total acidity to the maximum acidity reported by clinicians for so-called hyperacidity in man. Carlson insists that there is no evidence that the gastric glands under any pathologic condition are able to or do secrete a juice of higher than normal acidity. In fact, the presence in the stomach of gastric juice of full acid strength leads, by itself and immediately, to no untoward symptoms.

Why, then, are figures lower than 0.5 per cent. so frequently and commonly found for gastric juice? Boldyreff[6] believes that the most important factor in lowering the acidity of gastric juice from that actually secreted by the gland (0.5 per cent. as hydrochloric acid) to that usually found in the cavity of the stomach (0.25 per cent.) is the entrance of intestinal contents (pancreatic and intestinal juice and bile) into the stomach. Carlson, who accepts this interpretation,

2. Manson, J. S.: Hereditary Syndactylism and Polydactylism, Jour. Genetics, 1915, v, 51.
3. Beaumont, William: Experiments and Observations on the Gastric Juice and the Physiology of Digestion, Edinburgh, 1838, p. 37, footnote by Dr. Combe.
4. Boldyreff: Quart. Jour. Physiol., 1914, viii, 1.
5. Carlson, A. J.: Contributions to the Physiology of the Stomach, XXV, A Note on the Chemistry of Human Gastric Juice, Am. Jour. Physiol., 1915, xxxviii, 248.
6. The Actual Acidity of Human Gastric Juice, editorial, THE JOURNAL A. M. A., Aug. 15, 1914, p. 580.

suggests that it is this mechanism for self-regulation of the acidity of the stomach content which breaks down in cases of so-called hyperacidity in man. He adds that in cases of "hypersecretion" the quantity of juice secreted is greater than normal, and the secretion may persist in the absence of all normal stimuli, but the neutralizing factors suffice to reduce the acidity of the juice approximately to that found in the normal stomach. It is purely a balance of secretion rate and neutralization capacity. It follows that impairment of the neutralization factors or very excessive rate of gastric secretion would tend to render the acidity of the gastric content equal to that of pure gastric juice; in other words, to produce clinical "hyperacidity."

Carlson[3] has also offered a suggestion in partial explanation of the continuous secretion of gastric juice which may be observed. It is well known that products of digestion may act as secretory stimuli. The proteins of pure gastric juice undergo digestion in the stomach cavity. By yielding gastric secretagogues, this autodigestion of the gastric juice itself may be a factor in the continuous secretion of the stomach.

SOME ASPECTS OF LACTATION

Science has often cherished the hope of finding specific stimulants for the individual glands or organ functions. In the days when the now discarded expression "biliousness" was popular, great expectations were awakened by the possibility of finding a cholagogue which might in some way promote the physiologic activities of the liver. Indeed, cholagogic potencies were at one time ascribed to a number of familiar drugs, and actually received the endorsement of serious investigators. It was later demonstrated, however, that the evidence regarding the promoting effect of the selected substances on biliary secretion was either not valid when observations were extended over a sufficiently long period, or they were misleading in that the drug merely produced muscular effects along the biliary tract so that a more immediate discharge of bile simulated an increased secretion in the sense of new production. Thus far, bile alone has proved to be a true cholagogue.

A somewhat analogous experience appears to be in progress in the case of the mammary gland. The possible occurrence of real galactagogues — agents which will promote the production of milk by stimulating its secretion — has long made an appeal both to the dairy farmer and to the physician who is interested in the problem of lactation in women. Not long ago we commented on the recent observations that the extracts of certain glands appear to cause an immediate effect on the flow of milk from lactating animals.[1] The explanation of this peculiar response, which could be provoked by injections of suitable pituitary extracts, for example, was not entirely clear at first, although the observation itself was verified by several competent physiologists and on a variety of animal species. Obviously, if the result is merely a mechanical action giving rise to a sudden discharge of stored milk, its significance would be quite different from that of an action on the secreting mammary cells whereby they are stimulated to augmented activity, as the pancreas is after an injection of secretin into the circulation. Augmented milk production and accelerated discharge of milk are by no means of equal import or necessarily identical.

As the outcome of a series of experiments at the University of Chicago, Gaines[2] has come to the conclusion that the transient outflow of milk after injection of pituitary extracts is not at all due to secretory performance of the gland cells, but can be explained as a muscular phenomenon. The substance causes a muscular constriction of the milk ducts and alveoli, with a consequent expression of the milk present. Accordingly, the temporary flow of milk produced by such injections is entirely dependent on the amount of milk in the gland. The muscular character of the response can be demonstrated on an active mammary gland inflated with air, and even in an excised gland devoid of any circulation. The nonlactating gland, up to a late stage in pregnancy, is not sensitive to the pituitary substance. This difference in the response of the contractile tissue of the mammary gland, according to its stage of functional activity, finds an analogy in the unlike effects of epinephrin on the gravid and virgin uterus, respectively.

An active increase of pressure in the mammary gland closely resembling this effect of the pituitary product is caused by the simple act of nursing. Milking excites a similar reflex contraction of the gland musculature and an expression of milk, though in lesser degree than normal nursing. Of late it has been believed that the removal of milk from the mammary gland goes on quite independent of the nervous system. Gaines, however, has furnished strong presumptive evidence of a reflex, which can be completely inhibited by anesthesia. He believes that the stimulus which naturally excites this conditioned reflex must be found in the friction and sucking movements of the young acting on the cutaneous organs of the teat. The reflex arc is conceived to be dependent at times on the psychic condition of the mother, for the failure of vigorous nursing to secure milk under certain conditions (as in anesthesia or during the absence of the sucklings and consequent maternal concern) indicates that the removal of milk is not purely passive with respect to the activity of the gland. In the animals studied, the return of the young, after separation from

1. Pituitary Extract and Milk Secretion, editorial, THE JOURNAL A. M. A., Dec. 26, 1914, p. 2292.

2. Gaines, W. L.: A Contribution to the Physiology of Lactation, Am. Jour. Physiol., 1915, xxxviii, 285.

the mother, greatly augmented the effect of nursing or milking. It is even reported that with the gland under extreme tension, a contraction of the musculature and an actual ejection of milk in a spurt may follow the signs of maternal concern. It is said that the mother whale ejects milk from her mammary gland into the mouth of the young without the active sucking commonly observed in other mammalian species.

It has been doubted whether the capacity of the ducts and alveoli of the udder is as large as the volume of milk yielded at one time. In the case of the goat, the species particularly studied by Gaines, the indication is that practically the entire quantity of milk obtainable at any one period is present preformed in the udder. There is no reason, he argues, why the milk should not be regarded as being accumulated in the udder during the intervals between milkings, and the milking operation regarded as a more or less effectual method of stimulating a reflex. The latter may thus be conceived to cause a contraction in the gland musculature, resulting in the discharge or ejection of a greater or lesser part of the milk present, according to the effectiveness with which the reflex is excited. The problems of this suggested muscular mechanism, and its location, structure and innervation, are still to be elucidated.

TIME RELATIONS IN METABOLISM

The time relations of metabolism are beginning to arouse the attention of investigators. This is the result of the advance in knowledge of the biologic performances of the organism. In earlier days it represented progress to be able to contrast the beginning and the end results of metabolism; to measure accurately the intake and output of matter and energy, and to account exactly for the expenditures of the organism. This no longer suffices for the properly inquisitive physiologist. He is determined on learning where and how the intermediate stages of nutrition are carried on, so that each step in the fundamental chemical changes in the living body can be followed. The pathology of nutrition has thus gained a broader outlook. In the future, defects of function are to be located more specifically. It will no longer suffice to say that sugar is not burned up in some individual organism, and to designate this with the indefinite label of the diabetic. The deranged organ or the perverted mechanism must be discovered. Only in this broader way is there an opportunity for real therapeutic progress.

Proteins are highly complex substances far removed, in a chemical sense, from the simple end products in the form of which they leave the body. One might reasonably expect, therefore, that the story of this conversion would be a long one and that the time required for the disintegrative changes of protein digestion and metabolism would be correspondingly extended. The series of links in the chain of successive transformations is a long one. Digestion, absorption, transport and location in some tissue or other, synthesis or destruction, removal of the products and return to the blood stream, excretion—every step requires some time.

It has been shown that of the ultimate products of protein digestion—the amino-acids—the simpler representatives, such as glycocoll and alanin, require for their metabolism under optimal conditions a period of about nine hours' duration until the nitrogenous end products are recovered in the urine.[1] This period corresponds in a general way with the time relations for a comparable part of the protein molecule ingested as such.[2] By the use of the drug phlorhizin, which induces a condition of experimental diabetes in animals whereby a large portion of the protein metabolized in the body is excreted in the form of unoxidized sugar, both the nitrogenous and non-nitrogenous metabolic products of proteins and amino-acids can be studied. When protein is fed to a phlorhizinized individual, the urea and the glucose derived are excreted quite promptly.

Data are now available for the rate of metabolism of both proteins and amino-acids fed under the conditions noted. It is likewise known precisely how long a time is required for the reappearance of glucose itself fed to an animal rendered temporarily diabetic with phlorhizin. It appears[3] that the entire series of metabolic changes leading to the synthesis of glucose from amino-acids and its excretion may occupy a period of time only slightly in excess of that necessary for the simple absorption and elimination of the corresponding amount of ingested glucose. Janney[3] has shown essentially the same relations to exist after feeding a variety of typical proteins themselves. It follows, as he points out, that the rate of metabolism of proteins may be practically identical with that of amino-acids. The time required by the organism to effect digestion of the complex protein molecule into amino-acids, and the metabolism of the latter is scarcely longer than that required for the simple process of absorption and elimination of glucose (in the diabetic). This emphasizes the unexpected relative rapidity characteristic of metabolic reactions, for the chemical and physiologic changes involved include the digestion, that is, hydrolysis of protein into complex and simpler polypeptids, their further breakdown into amino-acids, absorption of these products, denitrogenization, the synthesis of glucose and urea, and the final elimination of these end products.

1. Csonka, F. A.: Jour. Biol. Chem., 1915, xx, 539.
2. Janney, N. W.: Jour. Biol. Chem., 1915, xx, 321.
3. Janney, N. W.: A Note on the Rate of Metabolism of Proteins and Amino-Acids, Jour. Biol. Chem., 1915, xxii, 191.

In this connection, it is interesting to compare the time relations of a quite different physiologic process for which figures have recently been supplied from the Department of Physiology at Columbia University.[4] It is now well known that foreign fats, as well as certain fat-soluble substances, such as some of the plant pigments, readily find their way into the secretion of the mammary gland. Bowes[4] fed arachis oil, which contains about 5 per cent. of arachic acid, to a lactating animal, and watched for the appearance of this readily identified substance in the milk. The result demonstrated that the time required for the ingested fatty acids to appear in this way is not over twelve and one-half hours, and probably less.

THE LOSSES OF WEIGHT DURING STARVATION

During starvation, body materials are necessarily used up to supply the energy requisite for the vital functions. Some of the organs, like the heart and the respiratory muscles, are maintained in continued activity independent of the intake of food, while life lasts. The result is well known. The body loses weight during inanition, owing to the consumption of some of its own tissue substances. This process of nutrition at the expense of one's own tissues may go on not alone for days, but even for weeks. Fasts exceeding a month in duration are not at all uncommon in the literature of physiology.[5]

Whether or not all tissues participate to a comparatively equal degree in the depletion brought about by starvation is a question which has long interested investigators. Statistics on the relative losses of weight in the case of different organs were collected more than half a century ago. The brain, heart and respiratory muscles, such as the diaphragm, were found to undergo little loss of weight for a long time. Hence arose the teleologic explanation that those organs which are most necessary for the maintenance of life are protected, as it were, from depletion. It might be assumed that those organs which are most active, and therefore require most energy, would show the greatest loss of weight. But this does not follow in fact. It is true that the nutritive needs of a tissue are determined by its activity; but inasmuch as the circulating fluids offer a common store of energy to be drawn on, the active tissues of the body can easily appropriate the materials set free elsewhere, and maintain their integrity at the expense of other parts.

A tenable explanation[6] of the varying losses of weight in the organs during starvation appears to be offered by the new investigations of Jackson at the University of Minnesota. Actual measurements show that with respect to the relative loss in weight during inanition, the organs may be divided into three groups. In the first group, which includes the suprarenals, thyroid, skeleton, eyeballs, spinal cord and brain, and thymus, there is little, if any, loss in absolute weight during inanition, and a corresponding increase in relative weight. In general, there is a relatively greater loss during chronic inanition, which is especially marked in the case of the thyroid gland. The thymus, having already undergone age involution, is affected only slightly, if at all. In the second group, which includes the kidneys, hypophysis, heart, testes, lungs, musculature and integument, the loss in absolute weight during inanition is more nearly in proportion to that of the whole body, so that their relative weight is usually not greatly changed. In all except the hypophysis, however, the loss is relatively greater during chronic inanition. Especially the lungs, testes, integument and musculature appear to lose markedly during chronic inanition. In the third group, including the spleen, liver and alimentary canal, the loss in absolute weight is relatively much greater than in the body as a whole, so they decrease in relative as well as in absolute weight.

To explain these facts, Jackson inclines to the view of Paschutin, who stated that the various organs lose in proportion to their storage content of available food supply. The various proteins, fats and carbohydrates are dissolved and carried away by the circulation at different times and with different degrees of rapidity. Thus the variability in the loss of weight in different organs and in different types of inanition would be ultimately explained primarily on a chemical basis. In the absence of a food supply, the animal organism deals with the resources of its tissues with an economy referable to the peculiarities of its composition.

4. Bowes, O. C.: The Rate of the Passage of Fatty Acid of Food into the Mammary Glands of the Goat, Jour. Biol. Chem., 1915, xxii, 11.

5. Prolonged Fasting, editorial, THE JOURNAL A. M. A., Sept. 11, 1915, p. 956.

6. Jackson, C. M.: Effects of Acute and Chronic Inanition upon the Relative Weights of the Various Organs and Systems of Adult Albino Rats, Am. Jour. Anat., 1915, xviii, 75.

Current Comment

HEALTH DISTRICTS IN NEW YORK CITY

A pamphlet recently issued by the Department of Health of the City of New York reports an interesting experiment in municipal health administration which has been carried on during the past year. Sept. 30, 1914, the commissioner of health issued an order establishing an experimental health district within which all the functions of the health department were to be locally directed. This district is bounded by Scommel, Division and Clinton streets and the East River, the objects being to try out the plan of local health administration, to avoid the overlapping of different bureaus and departments and to increase the usefulness of the department of health through the establishment of intimate neighborly relations between the department of health and the community. It is obvious that with the

continued growth of our larger cities, the municipal department of health will become as abstract and impersonal an institution as is the state department of health to the majority of the inhabitants of the state. Health District No. 1 is situated in the seventh ward of the lower East Side, in one of the most densely populated districts of New York. The twenty-one city blocks cover approximately 63 acres, with a population of about 35,000. Permanent quarters were secured in which three rooms are used for a milk station. On the walls appear placards and photographs of health exhibits, together with pictures illustrating the work of the street cleaning, tenement house and fire departments. Room has also been provided for afternoon and evening meetings of girls' leagues, boys' health leagues, parents' meetings, etc. Four rooms contain the offices of the district commissioner, the visiting nurses, tenement house inspectors, and others. From this office is carried on the work in the district on infant feeding, preschool and school examinations, midwife and foundling supervision, infectious disease supervision, food inspection and sanitation. The staff consists of a health officer, a medical inspector, one nurse each from the milk station, school group and infectious disease district, one nurse's assistant, one food inspector and one sanitary inspector. Each block in the district is numbered; and for each family an envelope is provided in the office files. These envelopes are grouped by houses and by blocks. A separate record is also kept of each house. Educational pamphlets were distributed to the people of the district by inspectors and officers direct to the patrons of the milk station, to the boys' and girls' leagues and to the parents' conferences. Mothers' meetings are held at the milk station, and talks given by the nurses on the care of the baby. The physicians located in the district have been organized into a local physicians' advisory committee. The various relief societies and the social agencies working in the district have been banded together as a local relief committee. Principals of the public schools, superintendents of hospitals, directors of social organizations and local civic workers have been organized into a general advisory committee. While the report covers only the first six months' work, it has already been demonstrated that the work of the health department has become a concrete matter to the inhabitants of the district. The district office is now recognized as a place where the people can come for guidance on health matters. The district staff has developed an interest in and a knowledge of the individual and in the various health conditions of the community. Many small matters have been adjusted directly at the district office without delay and without burdening the officials of the city health service. The cooperation between physicians and nurses has produced better results, the interest of the people in the exhibits and the literature has been marked, and the local organizations and individuals have been enabled to render much effective aid to the health department in developing a community health program. This most interesting experiment is worthy of the careful study of the health officers of all our larger cities. There is little doubt that, in the development of our great centers of population, much has been lost in the way of personal influence and acquaintanceship. Experimental Health District No. 1 is an effort to bring the public health work of our cities into closer relation and usefulness to the individual.

THE EFFECTS OF INHALATION OF CHLORIN GAS

The use of poisonous gases as a mode of warfare in the present European conflict has been attended with severe physiologic effects on the individuals who have been attacked by them. A few records are available of the responses of the animal organism to very dilute concentrations of chlorin and bromin, but they shed little light on what has lately been observed to occur when soldiers are "gassed" on the battlefield by the vapors of these elements mixed with air. Evidently the concentrations of the noxious gases in the atmosphere under the conditions in which they are employed in attack is greater than is generally encountered under any other likely condition such as might ordinarily arise in industrial works. Sir Edward Schäfer,[1] the Edinburgh physiologist, has demonstrated in a recent experimental investigation of the subject that the result of the inhalation of chlorin gas is always serious. When the content in the respired air is relatively small, no effect may be visible for some minutes, after which time a profound change takes place, sometimes with great suddenness. The conspicuous symptoms of the sudden change include a fall of blood pressure and a slowing or interruption of respiration. On the substitution of air for the gaseous mixture, a recovery may result if the content of chlorin has not been too large. Inasmuch as the inhaled chlorin cannot be carried to the tissues in a free state, the effects mentioned must be due to something happening in the lung. The "vitality" of the tissues is not lost, for the muscles and nerves are still irritable in the usual manner immediately after death, and the heart may also be responsive to appropriate stimuli. The lungs, however, invariably give evidence of the damage done by the inhalation of chlorin. Even after the shortest exposure to a fatal dose, they become intensely red and congested, either all over or in innumerable patches. There is room for considerable speculation as to the varied effects which might be produced locally in the lung by an irritant gas like chlorin. As Schäfer has pointed out, it may directly affect the bronchial musculature or the vascular musculature; it may stimulate the mucus-secreting mechanism of the air tubes; it may influence the coagulability or viscosity of the blood within the pulmonary vessels, or it may produce reflex effects by exciting the endings or afferent nerves within the lungs. Schäfer's own investigations point to the conclusion that chlorin produces its fatal results by causing obstruction of the pulmonary vessels, amounting in some cases to complete stasis, and not by causing contraction of the bronchioles. The pulmonary capillaries are found to be gorged with blood, and there is an extraordinary amount of edema in the interstitial tissue of the lung.

1. Schäfer, Edward: On the Immediate Effects of the Inhalation of Chlorine Gas, Brit. Med. Jour., Aug. 14, 1915, p. 245.

The edema is presumably secondary to the vascular obstruction. Apart from this, the tissues of the lung in cases of death by chlorin gas inhalation are normal, the epithelium cells of the bronchial tubes being well preserved, and little increase of mucus being evident. Information regarding the effects of inhalation of bromin vapor is still rather scanty. It appears, however, from Schäfer's statements, that although much more irritating to the conjunctival mucous membrane, bromin is less deleterious to the respiratory organs than chlorin, the fulminating effect of which appears to be absent in the case of bromin.

EMOTIONS AS CAUSES OF ORGANIC DISEASE

Skeptics have not been wanting who doubt the alleged influence of the mind on the physical organism, partly because of a materialistic philosophy dominant in scientific circles, but chiefly because of the difficulty of understanding how such influences could produce permanent bodily changes. Evidence to satisfy all the canons of inductive logic is now available not only to prove conclusively that emotions may operate in such a way as to cause organic as well as functional diseases, but also to show the exact mechanism by which the sympathetic nervous system, cooperating with certain of the ductless glands, may produce pathologic conditions. Naunyn reported a case of diabetes mellitus, the cause of which was an emotional shock. The Allen treatment of pancreatic diabetes, by means of starvation, recognizes the possibility of a "functional" disturbance of the pancreas, which may disappear with rest. Osler cites violent emotion, such as fright, in his account of the etiology of diabetes insipidus. Diseases of the skin, as alopecia areata, may have an emotional origin. The mechanism by which such profound organic disturbances are brought about is the autonomic nervous system. The rôle of this system in producing emotions has been studied over a period of years by Cannon and his pupils.[1] Beginning with the well-known fact that the autonomic nervous system takes its origin from the cranial-cervical, thoracic-lumbar and sacral regions of the cerebrospinal axis, Cannon attempts to correlate the activity of these portions of the system with three distinct types of emotions. Furher, he points out as a result of physiologic experiment that whenever the innervation from the thoracic-lumbar (sympathetic) portion of the system meets, in a viscus, the innervation from either the cranial-cervical or the sacral portion, there is always an opposition of the effects produced. In the eye, the contraction of the pupil is due to impulses received from the cranial autonomic, while the dilation of the pupil is effected by nerve fibers which come from the thoracic portion of the sympathetic. Again, the secretory and tonic motor innervation of the stomach come through the vagus nerve from sympathetic neurons which have their origin in the cervical division of that system. Stimulation of the splanchnic nerves causes an inhibition of both the secretory and motor functions of the stomach. The viscera of the pelvis are likewise doubly innervated. The autonomic neurons from the thoracic-lumbar segment cause relaxation of the lower end of the intestine. The sacral autonomic fibers for the same organ cause contraction. The bladder and reproductive organs are similarly innervated. Corresponding to the three parts of the autonomic system and the organs associated with them, there are three types of emotional response. The cranial portion of the system, by regulating the secretion and motion of the digestive organs, is concerned with building up the reserves of bodily strength. The emotions correlated with these physiologic activities are bodily satisfaction and well being. The sympathetic system is concerned especially with the functions of the suprarenal gland. The physiologic effects of the secretion of this gland are identical with the effects of stimulating the thoracic-lumbar sympathetic system: the pupil is dilated, the heart is accelerated, the functions of the stomach are inhibited, and the glands of the skin and the erector muscles of the hair are excited. Glycogen in the liver is liberated in the form of dextrose, with the result that sugar is available for muscles. The emotions which call for a sudden summoning of muscular energy are rage and fear, since correlated with them are the instincts of fighting and flight. The functions of the pelvic viscera are mainly in the nature of emptying accumulated secretions. The emotions depending on these functions are those of satiety and repletion. The conclusion is then evident that emotions may cause all of the changes which are produced by the autonomic system. The vascular changes thus produced have long been known, but the intimate relation between the suprarenal gland and this system has only recently been demonstrated. The case for emotional etiology of some diseases is thereby greatly strengthened.

1. Cannon, W. B.: Bodily Changes in Pain, Hunger, Fear and Rage, an Account of Recent Researches into the Function of Emotional Excitement, New York, Daniel Appleton & Co., 1915.

A METHOD OF ATTACK ON POVERTY AND TUBERCULOSIS

The New York Association for Improving the Condition of the Poor has just published a report on the results of the first two years of its Home Hospital experiment. The methods adopted in this experiment were described in The Journal last year.[1] It is based on a recognition of the fact that tuberculosis is not merely a human disease but also a social disorder. The problem among the tenement poor is often that of loss of self-respect and standards of living in the family, as well as loss of health in the tuberculous member. The association has found that by transplanting the whole family to suitable surroundings under adequate supervision, it is possible to preserve the family unit, and in some cases to rehabilitate it physically, socially and economically, while caring for the tuberculous patient. Many patients in the early stages of tuberculosis have been cured, while improved health and earning capacity have been attained for others whose cases were moderately advanced. Meanwhile, the well members of the family, especially the

1. A Hopeful Experiment in the Treatment of Tuberculosis, Miscellany, The Journal A. M. A., March 28, 1914, p. 1043.

children, have been protected from infection, and their physical condition improved. The family's total earning capacity has also been increased and its standards raised. The cost of this combined social and physical treatment of the whole problem has been found less than that of sending the breadwinner or homemaker to a hospital and either placing the dependents in institutions or supplying necessary relief at home. The Home Hospital plan, moreover, has a profound advantage over the other method in that the whole family is being taught proper habits and helped back to a normal self-supporting existence while the disease is being treated in one or more of its members. The hospital now has, on an average, about 130 patients and over 200 inmates. The demand for its services is so great that the intention is to make it permanent and to increase its size. The association disclaims any intention to supplant other much-needed agencies already in the field. The success of the Home Hospital experiment, however, must inevitably suggest the question whether it is not possible that in our tuberculosis campaign we have directed our attack too exclusively toward the disease as it exists in the individual. If tuberculosis is a social disorder, before we can hope to exterminate it, we must strike at its social roots.

THE WAR AND MEDICAL EDUCATION IN ENGLAND

According to the *British Medical Journal* there has been a decided falling off this year in the number of young men entering on the study of medicine. The number of medical students entering Cambridge is 41, as compared with 64 last year and 116 in 1913. There has also been a general falling off of students entering the medical schools in London. At St. Thomas Hospital, the entry is only about 45 per cent. of the average. At St. Mary's Hospital the attendance of students is about 23 per cent. of the average for the three years prior to 1913. At King's College Hospital Medical School the attendance is only 11 per cent. of the average; at Guy's Hospital it is only 10 per cent. of the average, and at St. Bartholomew's Hospital, only 2 per cent. At University College Hospital Medical School the entry is only a little below the normal; while at the London Hospital Medical School the entry is only 5 per cent. below the normal, and is actually larger than in 1913. Even with the reduced attendance as just indicated, it is believed that the number will be still further greatly reduced, since many of the students who have entered this year, it is expected, will shortly enlist in the army. The entry for special postgraduate classes has likewise declined, the reduction being 62 per cent., as compared with the average figures for the three years before the war. In contrast to the reduction in the number of male medical students, the enrolment at the London School of Medicine for Women has increased, 110 having entered this fall, as compared with sixty-nine last year and an average of forty-four in the three years preceding the war.

A NAUSEATING PUBLICITY

Sensational medical articles in newspapers have become a common, every-day occurrence. Pathology is now a breakfast table topic and the science of eugenics agitates the fluttering breasts of stately matrons and young débutantes at afternoon teas. The most recent sensation concerns the action of a Chicago physician regarding an infant marred by various anomalies of development. The newspapers featured the case; they elaborated it with gossip and discussion; with opinions from physicians; with the statements of social workers and psychologists; with letters of mothers and even of crippled and imbecile children. And the end is not yet. One newspaper publishes an autobiography of the physician, who promises to write, in serial form, the story of the case. The whole incident is nauseating. Infants with similar anomalies are born almost daily; no two cases are exactly alike; each is a problem unto itself. In this instance, apparently, the rights of the individual have been flippantly considered and the sacredness of the home has been ruthlessly bandied in public. Nothing has been nor can anything ever be gained by such disgusting discussion as has accompanied this particular incident. One person has been basking in the limelight of publicity, but in this instance it is not the brightness of the spotlight but a yellow sickly flame.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Drug Addict Attacks Physician.—A cocain addict of Galesburg entered the office of Dr. George D. Prewett, Peoria, November 5, and demanded cocain, and when refused attempted violence.

Personal.—Dr. John H. Riley, DeKalb, who has been ill for several weeks, is now reported to be improving.——Prof. Oliver H. Moore of the University of Illinois, who has recently returned from the war zone, gave a talk before the Y. W. C. A. at Champaign, November 15, in which he related his experiences with the Red Cross in France.——Dr. Warren R. Rainey, Salem, who is on duty in France, writes that he and Mrs. Rainey expect to return home before Christmas.——Dr. Oscar B. Stafford, La Salle, was seriously injured in a collision between his buggy and an automobile, November 10.——Dr. William G. Bechtold, Breese, who has been seriously ill with tetanus, is reported to be convalescent.

Chicago

Fresh-Air Cars.—Sixty surface street cars, five operated on each of twelve lines, were placed in service, November 21, as fresh-air cars. Each car had its windows and doors open and bore signs "Fresh-Air Car." The company announces that the experiment will be continued indefinitely. It is too early yet to determine whether or not it will be a success.

Diphtheria Carriers.—During October, 15,234 throat cultures from children were examined by the laboratory of the Department of Health. Of these, 656 were found to be carriers of the diphtheria bacillus, which means that they were innocent sources of danger to other children with whom they came in contact. According to the bulletin of the Health Department, 22,572 diphtheria specimens were examined during the month. This number included 7,338 specimens from known cases of diphtheria. The figures show that twenty-five suspected cultures were examined for each posi-

tive case found. The bulletin says that this might seem to be a small percentage of positive cases, but, when it is considered that over 600 children were potential distributors of this disease, the importance of these examinations will be realized, as it has long been known that the diphtheria carrier is the most prolific source of the spread of the disease.

The Case of the Bollinger Baby.—During the last few days the newspapers have been publishing more or less sensational statements regarding the case of a child born defective who was, it is alleged, allowed to die, when an operation might have saved its life.

The essential malformations of the body, as disclosed by the records of the coroner's office, were as follows:

Imperforate anus; fusion of the two kidneys into one, located on the left side and with a single ureter; absence of the right external ear and of the external auditory canal; a defective development of the skin over the shoulders, especially the right, causing an apparent shortening of the neck; absence of all or part of the coccyx and absence of the right testicle.

The acquired pathological conditions were: Small extradural hemorrhages in the spinal canal; small subpleural hemorrhages; a discharge from the nose, and the Coroner's physician reports an area of hemorrhage in the pia-mater in the left Sylvian fissure.

INDIANA

Tuberculosis Hospitals.—Two tuberculosis hospitals are being constructed for Blackford County by the Red Cross Society, one in Montpelier and the other at Hartford City.

Whiting Physicians Organize.—Physicians of Whiting met at the office of Dr. George H. Hoskins, November 7, and organized the Physicians' Club of Whiting, electing Dr. George H. Hoskins, president; and Dr. Chauncey M. Gillespie, secretary-treasurer.

Epidemic of Gastro-Intestinal Disorder.—More than 1,000 cases of some form of gastro-intestinal trouble occurred in the northern part of Indianapolis last week. Dr. Herman G. Morgan, sanitarian, after eliminating all other causes but that of water supply, has concluded that it is due to either bacteria or chemicals in the water. Boiling the water has prevented a spread of the infection.

Personal.—Dr. Frederick N. Wright, Hazelwood, while hunting near Hazelwood, was injured by the accidental discharge of his shotgun and may lose his right foot.——The house of Dr. George W. Grossnickle, Elkhart, was damaged by fire to the extent of $600, November 14.——Dr. Thomas B. Eastman, a member of the Indianapolis Board of Health, has been selected as a representative of that body on the advisory board which will consider the affairs of the city dispensary which has again been placed under the management of the Indiana University School of Medicine.

MARYLAND

Hospital News.—The new Emergency Hospital Building, Easton, was formally dedicated, November 23.

Leaves Large Estate.—Dr. Edmund C. Rivers, Baltimore, who was drowned October 24, left an estate valued at $170,000.

Hospital Wins Suit.—The Sheppard and Enoch Pratt Hospital was successful in a suit against Baltimore city in regard to damage and assessment of benefits on property of the trustees condemned in the construction of the Key Hyway. The hospital was finally awarded $1,705.

Physician Gives Travelogue Lecture.—Dr. Henry O. Reik, secretary of the board of managers of the Baltimore Eye, Ear and Throat Charity Hospital, is delivering a series of four travelogue lectures, illustrated by autochrome photographs. The subject of the first lecture was "The Great Southwest and the Grand Canyon."

Neurologists Organize.—The Baltimore Neurological Society was recently organized with a charter membership of seven. Dr. Charles M. Byrnes was elected president, and Dr. Daniel D. V. Stuart, Jr., secretary-treasurer. One of the requirements for membership is that the applicant shall have published at least one contribution to neurologic study.

Physicians Organize.—The Physicians' Civic Club was organized at a meeting of physicians at the Medical and Chirurgical Faculty Building, November 11, with a charter membership of 100. Dr. William T. Watson was elected president; Dr. Nathan R. Gorter, vice president, and Dr. Walter D. Wise, secretary-treasurer. Mr. Frederick C. Howe, commissioner of immigration of New York, delivered an address before the college on "An American City; Its

Pasteur Institute to Close.—The Pasteur Institute at Mercy Hospital, Baltimore, is to be discontinued after the two patients now under treatment are discharged. This decision was made on account of the recent reduction in the number of patients, the lack of work, the excess of expenses over income, and because the United States Public Health Service furnishes to reputable physicians, free of charge, the antirabic serum. Nearly 2,000 cases of hydrophobia had been treated in the hospital since the institution became associated with it.

Personal.—Dr. F. Janney Smith, chief resident physician at Johns Hopkins Hospital, Baltimore, has been appointed resident physician to Ford Hospital, Detroit.——Dr. Ralph B. Seem has been appointed first assistant superintendent to Johns Hopkins Hospital, succeeding Dr. Karl H. VanNorman, resigned.——Dr. Lewis A. Sexton has been promoted from admitting physician to the directorship of the dispensary of Johns Hopkins Hospital.——Dr. Leonard G. Rowntree, assistant head of the department of medicine of Johns Hopkins University, has been appointed professor of medicine and chief of the medical department of the University of Minnesota.——Dr. David M. R. Culbreth, Baltimore, has been elected vice president of the Caroline County chapter of the Eastern Shore Society of Baltimore.

MICHIGAN

The Ranney Bequest.—By the will of the late Dr. George E. Ranney, Lansing, a 20-acre tract is bequeathed as a memorial playground for the city.

Personal.—Dr. Abner Hayward, Mt. Clemens, is reported to be critically ill as the result of a cerebral hemorrhage.——Dr. James G. Cumming, Ann Arbor, has been appointed chief of the bureau of communicable diseases of the State Board of Health of California.

MISSOURI

Purchasable Factors in Public Health.—Dr. Allen W. Freeman, epidemiologist to the United States Public Health Service, delivered an address at the luncheon of the Commerce Club, St. Joseph, November 1, on "Purchasable Factors in Public Health."

Diphtheria Epidemic in Lamar.—On November 11 the Lamar City Board of Health issued orders closing all opera houses, picture shows and other public entertainments and all churches and meetings to children of 15 years of age and under, on account of the epidemic of diphtheria which prevails in the city. The lower grades of the city schools were ordered closed by the board of education until November 15.

Kansas City School Physicians Named.—Dr. Paul Paquin, health director of Kansas City, has appointed twenty-nine physicians as medical inspectors of schools. The examiners will serve gratuitously. They will be given police power as sanitary inspectors, receiving free street car transportation, will examine children in each school at least once a week and will inspect school hospitals and grounds and report insanitary conditions to the health department.

Personal.—Dr. J. Elliott Royer, Kansas City, has returned after two years postgraduate study in Europe, the last twelve months of which has been spent as volunteer special neurologist in British military hospitals.——Dr. John N. Baskett, Hannibal, was operated on in St. Louis, recently, for the removal of gallstones.——Dr. Luther A. Todd has resigned as president of the St. Joseph Board of Health.——Dr. Frank R. Morley, Sedalia, is reported to be critically ill with septicemia.——Dr. John P. Ralston, Springfield, suffered a second cerebral hemorrhage, October 25, and is reported to be in a serious condition.

St. Louis

Social Service Lecture.—Dr. Walter Fischel on October 25 delivered the third lecture in the course being given by members of the faculty of Washington University, under the auspices of the Department of Nursing and Social Service. The subject of his lecture was "Tuberculosis and Its Significance on the Social Problem."

Federal Sanitation Bureau in St. Louis.—St. Louis is to be district headquarters for the federal government's rural sanitation work. Surg. Mark J. White, U. S. P. H. S., now in charge of the St. Louis Marine Hospital, will supervise this work for the time being. Ten or more rooms in the Marine Hospital building will be refitted for the purpose and from ten to twelve chemists of the department will be sent from St. Louis to work in this field.

Washington University Appointments.—Washington University announced the appointment of Dr. Leo Loeb to the newly established chair of comparative pathology in the medical school; Dr. Philip A. Shaffer, Ph.D., has been appointed dean to date from June 3, 1915; Dr. Borden S. Veeder, has been promoted to assistant professor of pediatrics; Dr. Robert A. Gazell to associate in physiology and Dr. Philip C. Jeans to instructor in pediatrics.

Personal.—Dr. John A. Pringle, acting assistant superintendent of the City Hospital, is said to have made the highest grade in proficiency in the recent efficiency examination for superintendent of the institution; Dr. James Lewald stood second on the list and Dr. Eugene A. Scharff, third.——Dr. Frederick A. Baldwin, city bacteriologist, is suffering from a streptococcus infection of the right hand.——Dr. Ralph L. Thompson, recently returned from service on the western war front, delivered an address before the City Club, November 6. He also spoke before the members of the various alumni associations of the university.

MONTANA

Deaconess Hospital.—An active campaign is being carried on in Miles City to raise $30,000 for the construction of a Deaconess Hospital.

Sanitary Surveys Completed.—Inspectors connected with the State Board of Health have completed sanitary surveys of the water systems of Great Falls and Helena.

Professional Building in Bozeman.—Physicians, dentists and lawyers of Bozeman have united in the erection of a professional building, which will contain offices for members of the three professions.

Personal.—Dr. John W. Frizzell, Great Falls, fractured his leg while cranking his car recently.——Dr. Thomas E. Murray, Great Falls, will spend a year in Arizona and Florida.——Dr. George H. Putney, Carter, suffered a Colles fracture while cranking his automobile recently.——Dr. William G. MacDonald, Stockett, left for Europe, November 18, where he will serve with the royal army corps.——Drs. William H. Buskirk, Miles City, and Marcus H. Heldman, Ismay, will spend a year in the East in postgraduate work.

NEBRASKA

State Hospital Foundation to be Laid.—Foundations for the State Hospital of the Medical College of the University of Nebraska, Omaha, will be laid this winter. The hospital will be four stories in height with three story wings and will have six wards with accommodations for 116 beds and twelve private rooms.

NEW JERSEY

Dinner to Health Officer.—A testimonial dinner was given to former Health Officer David D. Chandler of Newark by about 200 of his friends, October 26.

Contract for Tuberculosis Building Awarded.—A contract has been awarded for the construction of a tuberculosis building for the New Jersey State Institution for Feeble-Minded Women, Vineland. The stipulated cost was $3,290.

Physicians' Club Organized.—The Physicians' Club of the city of Passaic was formally organized October 27. Dr. John N. Ryan was elected president; Dr. Abraham Machlin, vice president; Dr. Gerard J. Van Schott, Jr., secretary, and Dr. Cornelius Van Der Clock, treasurer.

Must Report Tuberculosis.—Dr. Charles V. Craster, health officer of Newark, has issued a circular to the physicians of Newark calling attention to the requirements of the tuberculosis law of the state, which he says is being continuously violated. The law requires that every case of tuberculosis, as well as any other case of contagious or communicable disease, be reported to the local board of health within forty-eight hours. Physicians have been in the habit of not reporting tuberculosis. The penalty for violation of the law is a fine of from $10 to $500.

Personal.—Dr. Charles Van Kopper, Great Notch, was seriously injured in a collison between automobile buses, November 12.——Dr. Jacob C. Price, Branchville, has been selected as director of the bureau of administration of the State Department of Health; Dr. Millard Knowlton, Trenton, chief of the division of publicity including the subdivision of child hygiene; and Dr. A. Clark Hunt, Metuchen, chief of the division of medical diagnosis, including contagious diseases.——Dr. Britton D. Evans, Greystone Park, medical director of the Morris Plains State Hospital, has been appointed chairman of the committee to prepare legislation for the better care of the insane of the state.——Dr. Charles E. MacDonald, Salem, has returned after several months' service in a war hospital in Budapest, Hungary.——Dr. Arthur J. Casselman, Camden, sailed for Europe, October 24, to become chief bacteriologist of the Women's American War Hospital, Paignton, North Devon, England.

NEW YORK

Personal.—Dr. William H. Heath, Buffalo, has been appointed executive medical advisor and sanitarian to the king of Siam. His duty will be to establish modern sanitary conditions in that country.——Dr. R. Leighton Leak, Syracuse, has been appointed physician in charge of the Syracuse Psychopathic Hospital, succeeding Dr. Hersey G. Locke, resigned.

Rabies.—During the year ended November 1, dogs bit 3,107 persons in New York City, requiring these persons to take the Pasteur antirabic treatment. It is said that the muzzling ordinance is ineffective, and that 354 of the dogs that bit were on the leash and 567 were muzzled. In all instances in which the muzzled dog bit, the muzzle was of the strap variety.

State Investigation of Anthrax Fatalities.—The recent death of Siphia Rosen from anthrax attributed to infection from a fur collar has led to an investigation by the state. Dr. T. C. Graham Rogers, director of the division of industrial hygiene of the state department of labor, is giving the matter his personal attention and proposes to make a thorough investigation of the method of curing and manufacturing cheap furs in this city. Both Dr. Rogers and Dr. Alva H. Doty have expressed the opinion that there need be no alarm felt that the disease would spread.

Tuberculosis Hospitals.—Plans are being made by the board of supervisors of Herkimer County for the County Tuberculosis Sanatorium for which an appropriation of $25 000 was voted at the last election.——At the election in Niagara County, November 2, the tuberculosis hospital referendum was carried by a safe plurality.——The supervisors of Chautauqua County have accepted the gift of a hospital for tuberculosis to be erected on a site purchased by the trustees, under the will of Elizabeth N. Newton, Fredonia, who left a bequest of $150,000 for that purpose.

The Infant Welfare Campaign of 1915.—Official statistics with reference to infant mortality are now available for the first seven months of 1915. They demonstrate the success of the campaign against infant mortality that has been prosecuted with such vigor since the spring of 1914. The infant mortality rate from Jan. 1 to Aug. 1, 1913, was 111 per 1,000 living births; for the same period of 1914 it was 102 per 1,000, and this year the rate has fallen to 98 per 1,000. Two exhibits were in constant use throughout the state and the newspapers have accorded the work generous support. By the aid of these instrumentalities the workers have been enabled to increase the number of infant welfare stations from thirty-two in twelve different localities in 1913 to seventy-four in forty-five cities and towns during the present year. The statistics have demonstrated the utility of these stations in every locality in which they have been established. Efforts have also been made to establish little mothers' leagues in the public and parochial schools and thus far about 12,000 children have been enrolled. Sunday, June 20, was generally observed throughout the state as Child Welfare Day and it is hoped that this may become a permanent feature and be generally observed in succeeding years.

New York City

Health Department Official Dies.—Bayard Clark Fuller, formerly chief inspector for the department of health, died November 10. Mr. Fuller had been in the service of the department for twenty years.

Harvey Society Lectures.—The third lecture of the Harvey Society lecture series, delivered before the New York Academy of Medicine, October 27, was by Dr. Eugene DuBois, Cornell University, on "The Respiration Calorimeter in Clinical Medicine."

Diagnostic Clinic for the Bronx.—The Department of Health has established a Wassermann diagnostic clinic at its Bronx office, Third Avenue and St. Paul's Place. Physicians who desire to avail themselves of the services thus offered are urged to refer their cases to this office.

Court Enforces Medical Treatment of Child.—The authority of the board of education to compel parents to send their children to school in good physical condition has been sus-

tained by the children's court of Brooklyn, which ordered the parents of a pupil to have the boy's diseased tonsils removed.

Personal.—Dr. Wesley M. Baldwin has accepted the appointment of professor of anatomy at the Albany Medical College.——Dr. Charles V. Morrill has been appointed instructor in anatomy and Dr. Robert Chambers assistant in anatomy, to succeed Dr. Baldwin at the Cornell University Medical College.

Lectures for Health Board Employees.—A course of lectures on the "Haunts and Habits of Microbes" will be given to the employees of the Health Department on alternate Saturday afternoons, beginning November 20, and continuing until May. The lectures are under the direction of Dr. William H. Park, and will be given at the laboratory of Bellevue Hospital Medical College.

Suit Against Rockefeller Institute Fails.—The damage suit against Rockefeller Institute for $200,000, brought by two of the former employees of the institute, was dismissed in the United States district court, November 4. The plaintiffs in the case alleged that the doctors had persuaded them to submit to the injection of serum from which they had become infected with an incurable disease. The court held that the facts were insufficient to constitute a cause of action.

Homes for the Aged Investigated.—During the past summer the Department of Health, through its division of inspection, made a survey of forty-six institutions devoted exclusively to the care of the aged, for the purpose of determining the adequacy and suitability of the provisions made for old people in the various homes throughout the city. The report shows that in not a single instance was anything found concerning which serious complaint could justifiably be made. The buildings were all found to be ample in size, and the ventilation, lighting, heating, plumbing and sewage satisfactory. The buildings were all well equipped and the housekeeping invariably well done. There were excellent accommodations for the sick. There were a few minor suggestions made, among them that in several instances a more thorough screening against flies would add to the comfort of the inmates.

Medical College Reorganizes Surgical Staff.—Cornell University Medical College has recently reorganized its surgical service at Bellevue Hospital. There is now one visiting surgeon in charge with continuous service; two visiting surgeons with continuous service limited to some special subdivision of general surgery; two associate visiting surgeons on a full-time salary basis with four assistants who will also be juniors to the outpatient department. The organization now includes laboratories for surgical pathology and experimental surgery each under a full-time salaried man. These laboratories are available to all members of the staff who have the privilege of working therein. The entire staff has been appointed to positions on the department of surgery in the medical college. All students take a portion of their ward work in this organization. The essential changes from the system formerly in vogue consists in having one head, continuous service, full-time salaried surgeons and laboratories under the jurisdiction of the surgical service. The staff as at present constituted is as follows: visiting surgeon in charge—Dr. John A. Hartwell, assistant professor of surgery; visiting surgeons—Drs. George Woolsey and John Rogers, professors of clinical surgery; associate surgeons—Drs. Kenneth Bulkley and James N. Worcester, instructors in clinical surgery; junior surgeon—Dr. Fenwick Beekman, instructor in operative surgery; surgical pathologist—Benjamin M. Vance, instructor in pathology, and assistant in experimental pathology—Dr. Joseph W. McMeans, assistant in surgery.

OHIO

Youngstown Pulpits Filled by Physicians.—November 28, through the efforts of the Mahoning County Medical Society, the pulpits of Youngstown were filled by physicians who delivered addresses on health and sanitation.

Personal.—Dr. E. Sheldrick, Cleveland, while motoring near Hagerstown, was seriously injured November 2, by the overturning of his automobile.——Dr. Elmer W. Coe, Youngstown, is ill with smallpox.——Dr. W. R. Moore, Mt. Pleasant, has been appointed assistant medical examiner on the State Industrial Commission.——Dr. William Scott, Loveland, underwent an operation, November 2.

District Tuberculosis Hospital.—At a meeting of the trustees of the District Tuberculosis Hospital held in Chillicothe, November 11, it was decided to erect an administration building to cost $35,000. The funds will be furnished by the counties in the district, each county paying a proportionate share on the basis of its tax duplicates, which will be turned over to the trustees by the first of the year.

Hydrophobia.—According to figures of State Board of Health, since January, 1915, the laboratory examined 189 brains of animals suspected of having rabies, and the Board of Health of Cincinnati examined twenty-four additional. In 115 of the state and fourteen of the Cincinnati examinations the disease was found, showing that the rabies is widespread in Ohio. Five cases in human beings were reported during the year, all of which were fatal.

Hospital News.—The physicians of Bellaire and trustees of the City Hospital held a conference, November 12, on the question of equipment. An offer has been made by a friend of the institution to donate $3,000 to the hospital fund on condition that the trustees raise an additional $10,000. Of this amount, $6,000 had already been subscribed at the time of the meeting.——A Roentgen-ray machine to cost about $3,000 has been installed in the East Liverpool City Hospital. Dr. Joseph W. Chetwynd has been appointed roentgenologist to the institution.

Cincinnati

Work on School to Begin in April.—Dr. Christian R. Holmes, dean of the medical department of the University of Cincinnati, announces that it is expected that the work of construction on the new medical school will begin in April next. The site for the college building is now being graded and a revision of the building plans is being made.

Personal.—Drs. Guy G. Giffen and Giles A. DeCoursey have been appointed junior surgeons on the genito-urinary staff of the Cincinnati Hospital.——Dr. Max W. Shaweker has succeeded Dr. Philip Coulter as assistant receiving surgeon of the Cincinnati General Hospital. Dr. Coulter has been appointed to a position in the United States Public Health Service and will take part in the campaign against trachoma in Virginia.——Dr. Erie A. Fennell has resigned as resident physician of the City Infirmary and the two refuge farms.

Warning to Physicians.—The *Weekly Bulletin* of the Cincinnati Academy of Medicine warns local practitioners against a young German who has been visiting the members of the profession in Cincinnati who have German names, claiming that he bears the same name and obtaining small sums of money from them on the pretense that he is an interned sailor and wishes to enlist in the United States Navy.

PENNSYLVANIA

Personal.—Dr. Frank V. McConkey, York, who underwent operation for appendicitis, recently, is reported to be convalescent.——Dr. Albert A. Lindabury, Scranton, is reported to be seriously ill and is under treatment at the Scranton State Hospital.——Dr. James R. Montgomery, Bloomsburg, while making a professional call in the country, suffered a fracture of the arm by the overturning of his automobile.

Philadelphia

Rush Society Lecture.—The twelfth Rush Society lecture will be delivered at the College of Physicians, November 29, by Dr. Daniel J. McCarthy of the University of Pennsylvania Medical School, on "Medical and Surgical Problems Incident to War."

Women Physicians to Lecture.—Drs. Clara Marshall and Martha Tracy and Miss Mary Ingham have been appointed a committee to arrange for a course in preventive medicine and hygiene to be given to mothers and women generally by the Women's Medical College of Pennsylvania.

Civil Service Examinations.—Notice is given by the Philadelphia Civil Service Commission of the following examinations: December 15, chief of the Division of Vital Statistics with a salary of $1,750 under the Health and Charities Department of the Bureau of Health; January 18, resident physician, open to residents of Pennsylvania with a salary of $600 to $900 under the Department of Health and Charities under the Bureau of Health and Charities; January 19, assistant bacteriologist, first assistant bacteriologist and fourth assistant bacteriologist with respective salaries of $1,400 to $1,500; $2,000 and $1,000, under the Department of Health and Charities of the Bureau of Health; January 13, assistant, pathologic and bacteriologic laboratory, with a salary of $720, under the Department of Health and Charities of the Bureau of Charities; December 10, assistant, antitoxin laboratory, men and women, with a salary of $1,000, under the Department of Health and Charities of the Bureau of Health;

December 27, assistant bacteriologist with a salary of $1,200, under the Department of Public Works of the Water Bureau. Applications for these positions must be executed and filed with the commission not later than the third day prior to and exclusive of the day of the examination.

SOUTH DAKOTA

Off for the War.—Dr. Ole W. Rood, Watertown, has started for Paris, where he will enter a French military hospital.——Dr. Alexander O. Fasser, Bellefourche, has started for France, where he will serve in an American hospital in the war zone.

Removal of a Smallpox Patient.—The supreme court of South Dakota has decided in the case of Gould, appellant, vs. Dr. William F. Keller, Sioux Falls, officer of the board of health in Minnehaha County, that a health officer or physician cannot be compelled to remove a smallpox patient, or other such dangerous patient, from a residence, when there is no pest house or place provided by the city for the detention of such patients. In Sioux Falls a patient had smallpox in a private house and the owner, Gould, tried to compel the board of health to remove the patient. As the city had no pest house, there was nothing to do but leave the patient in the house where the illness occurred. The trial court refused under the circumstances to issue a writ to remove the patient.

CANADA

Hospital News.—Upper Lodge, the beautiful royal domain at Bushey Park, Surrey, has been offered by the king to the Canadian Red Cross. The offer has been accepted by Surg.-Gen. Carleton Jones, on behalf of the Canadian Army Medical Service. It will be furnished and equipped as a convalescent home under Col. Charles A. Hodgetts. It will be known as the Princess Mary's Canadian Red Cross Convalescent Home and will be equipped with 300 beds.——The Carleton County Protestant General Hospital, Ottawa, Ont., held its annual general meeting October 14. The year has been successful and the finance committee was enabled to reduce the overdraft by $2,500. The number of patients admited during the year was 2,743, including a number of soldiers.——The new civic hospital for infectious diseases in Quebec was opened September 30. The hospital will be under the supervision of the sisters of the gray nunnery.——Stratford, Ont., will vote on a bylaw January 1 to provide for $7,500 to wipe out the debt of their city hospital.——The old Bishop Strachan School on College Street, Toronto, will soon be in operation as the first convalescent home for returned wounded soldiers. When completed it will accommodate 200.——The public institutions, including hospitals for the insane and others, in Ontario, have contributed a large proportion of the equipment for the new Ontario Military Hospital being established in Orpington, Kent, England.

Personal.—Lieut. James W. Richardson, M.D., Calgary, Alta., operating specialist in the Imperial Army Medical Corps, is in Canada on furlough after a year's service.——Lieut. Ramsay D. Rakin, Stratford, Ont., is medical officer to the Perth County, Ontario, Battalion Staff.——Dr. Daniel Phelan, surgeon to the Kingston, Ont., penitentiary for nineteen years has retired.——Dr. Benjamin J. McConnell, Winnipeg, Man., has been appointed coroner for that city.——Dr. Weston W. Milburn, Macleod, Alta., has been appointed surgeon for the Blood Reserve in succession to the late Dr. Oliver C. Edwards.——Dr. John Cameron, Middlesex Hospital, London, Eng., has been appointed to the chair of anatomy in Dalhousie University, Halifax, N. S., in succession to the late Dr. Andrew W. H. Lindsay.——Dr. Oliver R. Mabee, Toronto, has been appointed acting professor of pathology in the University of Toronto, pending the return of Prof. John J. Mackenzie, Toronto, whose leave of absence has been extended.——Maj. George H. Burnham, Toronto, has been mentioned for distinguished conduct in the field.——Maj. R. Percy Wright, Montreal, has been appointed officer in command of No. 1 Field Ambulance in succession to Lieut.-Col. Arthur E. Ross, Kingston, Ont., who is now assistant director of medical services of the first Canadian division.——Dr. Henry H. Planche, A.M.C., Cookshire, Que., is on active service at the Dardanelles.——Dr. Howard Hepburn, one-time medical superintendent of the General Hospital, Montreal, is serving on the staff of one of the British field hospitals.——Dr. Harold Tait, R.A.M.C., St. John's, N. F., is on the staff of a base hospital of 3,000 beds in Malta.——Maj. L. Handford McKee, Montreal, has been invalided to England from the Dardanelles.——Capt. William J. Enright, Twenty-Second Battalion, of Port Daniel East, Que., is reported wounded.

Ontario Medical Commission.—The past week has been an important one before the Ontario Medical Commission. The Academy of Medicine, Toronto, presented the case for the medical practitioners from various standpoints, the president of the academy, Dr. William H. B. Aikins, being in charge. Dr. Arthur Jukes Johnson, chief coroner for Toronto, presented the medicolegal aspect of medical practice and cited concrete cases in support of his views. Dr. Albert A. Macdonald, Toronto, spoke for the life insurance companies and also cited cases supporting his claim that the public interested in their policies should be protected by the law. Dr. D. J. Gibbs Wishart said that specialists after graduation should take from two to five years special training before becoming specialists in any line. Dr. Goldwin W. Howland, specialist in nervous diseases, told of the many cases which came to him from the osteopaths and chiropractors after they had failed to relieve the "kinks in the spine" and he had to pass them on to the Home for Incurables. Postmortem examinations showed that the "kinks" had been cancer of the brain and various other nervous diseases. Dr. Clarence L. Starr made out a strong case for the orthopedic surgeons. Dr. Charles R. Dickson stated that the Roentgen ray in the hands of an unqualified man was as dangerous as strychnin. Dr. Charles J. C. O. Hastings, M. O. H., Toronto, and Dr. John W. S. McCullough, chief health officer for Ontario, made strong attacks against licensing any one to practice medicine who had not passed the prescribed examinations. Dr. McCullough presented the following memoranda from the Ontario Board of Health: (1) The standard of medical education should be maintained and with the advance of scientific knowledge increased. (2) Those entering on the study of medicine should have a good preliminary education equal at least to honor matriculation. (3) The course of study should embrace at least five years of nine months each. (4) Since it is admitted that the fundamental principles of medicine embrace a thorough knowledge of anatomy, physiology, biology, physiologic chemistry, bacteriology, pathology, diagnosis, as well as clinical experience, these subjects must be included in the course of study, no matter what form of treatment any physician desires to pursue. (5) No unqualified man or woman should be allowed to practice medicine in any shape or form. The nursing profession also placed its views before the commission. The suggestions included the establishing of a chair of nursing in the University of Toronto, and the appointment by the provincial government of a council for the education of nurses to consist of seven members, two to be medical men and the remaining five to be nurses. It was also proposed that an inspector of nurse training be appointed, and that a uniform examination be established twice a year with nurses as examiners. The fact was presented to the commissioner that there are no schools or colleges in Canada for osteopaths or chiropractors, and that such practitioners are not licensed in England.

GENERAL

Dr. Carter Seriously Ill.—It was reported from Washington, November 18, that Asst. Surg.-Gen. Henry R. Carter, U. S. P. H. S., who recently went to Porto Rico to study dengue, is critically ill with that disease.

Eye, Ear and Throat Specialists Will Meet.—The twenty-first annual meeting of the American Academy of Ophthalmology and Oto-Laryngology will be held in Memphis, Tenn., December 5 to 7, under the presidency of Dr. John E. Brown, Columbus, Ohio.

Southern Medical Women Elect Officers.—At the third annual meeting of the Association of Southern Medical Women at Dallas, November 10, the following officers were elected: president, Dr. Mary E. Lapham, Highlands, N. C.; vice presidents, Drs. Mary A. Parsons and Mary L. Strobel, Washington, D. C.; and secretary-treasurer, Dr. L. Rosa H. Gant, Spartanburg, S. C.

Distributing Points for Red Cross Supplies.—At a meeting of the American National Red Cross in New York City, recently, it was announced that Boston, Washington, New Orleans, Jeffersonville, Ind., Chicago, St. Louis, Omaha, San Antonio, Texas, El Paso, Texas, Seattle and San Francisco would be the distributing points for Red Cross supplies and mobilization centers for nurses and physicians. At present 7,000 Red Cross nurses are enrolled in the United States.

First Aid Symposium.—At the regular meeting of the Baltimore City Medical Society, November 19, a symposium on

first aid was held, in which the subject was discussed from the standpoint of the Army by Col. Louis A. LaGarde, M. C.; from the standpoint of the Navy by Surg. Richmond C. Holcomb; from that of the Public Health Service by Asst. Surg.-Gen. William Colby Rucker, and from the standpoint of the American National Red Cross by Maj. Robert U. Patterson, M. C., U. S. Army.

Baby Week.—The health officials of thirty-nine states have already pledged their cooperation in the observance of a nation-wide "Baby Week," March 4 to 11, 1916, according to an announcement of the federal children's bureau. There has been much interest manifested and many inquiries to the bureau regarding the coming Baby Week. The bureau has prepared a circular, which will be of great assistance to communities proposing to conduct local Baby Week campaigns.

Railway Surgeons Meet.—At the annual meeting of the Southern States Association of Railway Surgeons held in Dallas, November 8, under the presidency of Dr. Thomas H. Hancock, Atlanta, Ga., Dr. Southgate Leigh, Norfolk, Va., was elected president; Dr. Robert W. Knox, Houston, Texas, vice president, and Dr. Ambrose McCoy, Jackson, Tenn., secretary. A day was appointed to work with Dr. Joseph C. Bloodgood, Baltimore, in aiding the propaganda of the first aid conference.

Buy and Sell Christmas Seals.—Red Cross Christmas Seals, which were first put on sale in 1907 in the state of Delaware, are now sold throughout the United States. The educational influence of the Christmas seals campaign has been responsible for much of the present widespread interest in the campaign against tuberculosis. The worker in the Christmas seals campaign meets with an established demand for Christmas seals. The campaigns in various states have different forms. The National Association for the Study and Prevention of Tuberculosis, in cooperation with the American Red Cross, will again this year award banners for the largest sales of Christmas seals per capita for population. It is hoped that new records for total sales and interest in this worthy cause will be established this year. Over a half million dollars was raised last year. Information and literature regarding the campaign may be obtained by addressing the National Association for the Study and Prevention of Tuberculosis, 105 East Twenty-Second Street, New York City.

Bequests and Donations.—The following bequests and donations have recently been announced:

Mercy Hospital, Cadillac, Mich., $10,000, and $20,000 to be used by the municipality in the betterment of health conditions, the income to be used for paying the salary of a visiting nurse, by the will of Mrs. Delos F. Diggins.

Jewish Hospital, Kansas City, for the erection of a memorial building in honor of their mother, a donation of $15,000 from Henry, Samuel, Robert, Isadore and Charles Straus.

Women's Hospital in the State of New York and Presbyterian Hospital, New York City, each $100,000; Manhattan Eye and Ear Hospital, and New York Institute for the Deaf and Dumb, each $50,000; St. Luke's Hospital, $25,000; by the will of Mrs. Maria DeWitt Jesup.

Methodist Episcopal Hospital, New York, $5,000, and Presbyterian Hospital, $1,000, by the will of George Clinton Batcheller.

Long Island College Hospital, Brooklyn, $75,000; House of St. Giles the Cripple, Brooklyn, $30,000, and Hudson City Hospital, Hudson, New York, $25,000, by the will of Mrs. Katherine S. Leavitt.

National Medical Day.—The National Association for the Study and Prevention of Tuberculosis makes an urgent plea that every man and woman in the United States of adult age join in the movement for annual or other periodic medical examination of themselves. During the week from December 6 to 12, known as tuberculosis week, one day, December 8, is asked to be observed as a national medical examination day. The association has issued a circular describing in detail how the advantages of medical examination may be obtained and details certain physical impairments. This circular is sent on request from the office of the association, 105 East Twenty-Second Street, New York City.

Health by Pictures.—The United States Public Health Service has opened a new campaign to teach the people of the country to combat disease. It has established a "stereopticon loan library," the first of its kind. This library is sending out daily, at the request of sanitarians, educators and other persons interested in the promulgation of personal and public sanitation, slides portraying the different phases of the subjects. The surgeon-general's office has prepared catalogs containing photographs of the slides and descriptive matter thereon. These books are being sent out to persons and organizations interested, so that request may be made for the particular slides desired for lectures in the various communities. A wide range of subjects is covered by the stereopticon loan library. It portrays sanitary conditions in Alaska and covers the whole field of yellow fever. There are special collections on the diseases of children, the hookworm, leprosy, malaria, milk production, mouth hygiene, pellagra, plague, rural schools, smallpox, tropical diseases, tuberculosis and typhoid fever. There are duplicate sets of these slides, so that the service is able to supply more than one call at the same time, should any of them prove more popular than others. The new library rapidly is growing in demand, and individuals as well as state and local health authorities and schools throughout the country are sending in their requests for the pictures. This new scheme performs a twofold function. It provides a logical system of public health education, while at the same time furnishing entertainment for the people. It also enables the service to spread the doctrine of personal hygiene and public sanitation thus over a large field, and possibly reach many persons who could not be interested in the reading and study of dry technical pamphlets on these important subjects.

WAR NOTES

American Physicians and Sanitarians Decorated.—Crown Prince Alexander of Serbia decorated forty-three American physicians and sanitary engineers for their services in controlling typhus fever.

Obligation of the Red Cross to the Armed Forces of the United States.—The American Red Cross has issued a circular of information regarding the obligation of the American Red Cross to the armed forces of the United States. These obligations are divided into three classes: funds, personnel and supplies. The personnel is divided into three classes: including those of the trained personnel who are willing to serve wherever needed; those willing to serve in their home country only, and those willing to serve at their places of residence only. From the first class only are taken the personnel for field columns, hospital columns, supply columns and information bureau sections.

More Hospital Supplies Shipped.—The American Red Cross shipped on the steamer *Rochambeau*, from New York, November 6, 12,130 pounds of relief contributions for the sick, wounded and destitute in France, consigned to the American Relief Clearing House, Paris, and also 7,000 pounds of supplies for Armenia, 15,000 pounds of hospital supplies for German prisoners in Russia and 4,875 pounds for the Russian Red Cross. This last consignment was sent in care of the Russian minister for foreign affairs, Petrograd.——Nearly 10,000 cases of medicines and medical and surgical supplies for use in military hospitals in England and on the British war front, were shipped on the steamer *Colonian*, from Boston, November 6.

Third Harvard Surgical Unit Sails.—The Third Harvard Surgical Unit sailed from New York for Falmouth, England, on the steamer *Noordam*, November 17. The unit is in charge of Dr. David Cheever, Boston, and consists of thirty-six nurses and the following physicians: Drs. John L. Bremer, Boston; Bronson Crothers, Cambridge, Mass.; Abram L. Van Meter, Boston; John F. Dillon, San Francisco; R. H. McNair, Springfield, Mass.; Frank A. Smith, R. S. Catherton, Armond A. Halliday, Toronto; Edward B. Towne, Boston; William D. B. Jack, Vancouver, B. C.; George Benet, Boston; Eben W. Fiske, Boston; Frank Abbott, Toronto; Lawrence R. Hill, Concord, N. H.; Winford O. Wilder, Pittsfield, Mass.; A. Gale Straw, Manchester, N. H.; E. O. Thomas, John C. Phillips, Wenham, Mass.; George Osgood, Cohasset, Mass.; George M. Watson, Manchester, N. H., and Macy Brooks, Philadelphia. Sir Wilfred T. Grenfell of Labrador expects to associate himself with the unit and will sail early in December for England.

LONDON LETTER

LONDON, Nov. 5, 1915.

The War

THE POSITION OF MEDICAL STUDENTS

The position of medical students is the subject of a good deal of discussion. On the one hand, the government is appealing to every physically fit man of military age to join the combatant forces of the greatest voluntary army the world has ever seen. On the other hand, the shortage of physicians, which has frequently been pointed out in THE JOURNAL, will be increased if medical students are withdrawn from their studies. The authorities have decided that students in the fourth and fifth years of study should complete their course as rapidly as possible but that students in the first, second and third year should join the army. The effect of recruiting is shown by the statistics of ten leading medical schools, in which, during the first year of the war, the number of students was 1,891, as compared with the normal number of 2,562. The number of medical students who have entered Cambridge University this year is forty-one, as compared with 116 in the year 1913. At St. Thomas's Hospital, London, the number is 45 per cent. below the average. The director general of the Army Medical Corps has asked for an additional 2,000 physicians before Christmas for war service. The casualty lists of one week show the names of fifteen physicians, and the obituary lists of physicians killed usually three or four. Sir D. Macalister, in his presidential address at the opening of the present session of the General Medical Council, said that within the next few months every qualified man of suitable age who was fit for the work of an officer in the medical corps would be needed. The profession looked to the public to lighten the sacrifices and burdens which all must endure in these days, both by loyalty to the absent and by consideration for those who took their place. The proportion of country physicians who had been set free for military service was higher than that from the large centers of population. The town physician, owing to the somewhat loose attachment of his patients to him, feared that they might be alienated if he went into the army. The medical war committees were endeavoring to promote equitable agreements between practitioners who remained on civil duty and their colleagues on active service, and he thought the profession had given abundant proofs that it would not be wanting in duty or in self-denial. From the British dominions and from other countries over 240 physicians had been registered this year, and when certain reciprocity arrangements had been completed, the number from Canada would be considerably increased. Although the War Office authorities recognized that the withdrawal from professional instruction of large numbers of medical students, of the first years, would have a serious effect on the future, they had deemed it inadvisable to discourage junior students who offered themselves for combatant service. The result of medical students accepting commissions and enlisting was that the prospective shortage of 250 qualified practitioners per annum, which he had mentioned on a former occasion as probable during the coming years, would almost certainly be exceeded. There was one direction in which it appeared likely some economy of medical students might be effected. The minor vessels of the fleets carried a surgical "probationer," and for this work medical students who had completed their physiologic and anatomic studies and had been instructed in surgical dressing are preferred. He was authorized to make it known that any "probationer" who after, say, six months' service, desired to present himself for a professional examination or to resume his studies, would be granted leave of absence or be demobilized, and a less senior student be appointed in his place. By such rotation of service, a succession of students might continue to be employed in war work and yet the qualification of none would be unduly delayed.

THE ROYAL COLLEGE OF SURGEONS

The manner in which the war is permeating our whole national life is shown by the recent report of the College of Surgeons. Six members of the staff have enlisted in the army. The physiologic curator of the museum is serving in connection with the voluntary hospital under the French Red Cross. It is proposed to transfer temporarily a pathologic attendant in the museum to the Army Medical Service for duties in connection with the transport to this country of pathologic specimens from military sources. In several cases, candidates are allowed to present themselves somewhat earlier than would otherwise be allowed. Moreover, time spent as assistant on active service in a naval vessel or in a naval or military hospital, or any hospital utilized by the naval or military authorities, not exceeding six months, may be allowed to count for the equivalent period of medical and surgical hospital practice and for three months each of medical clinical clerkship and surgical dressership, provided that a satisfactory certificate is produced from the principal medical officer under whom the assistant serves.

PARIS LETTER

PARIS, Oct. 28, 1915.

The War

MEASURES FOR THE BETTER UTILIZATION OF MEDICAL ABILITY

Because of the constant increase of the staff of the medical service and the desirability of having exact information available with regard to the officers of the service, the assistant secretary of the military medical service has ordered a report to be drawn up for each officer and each civilian physician employed in a military establishment, to permit the best utilization of each man's abilities. Each individual report is to show, apart from the physician's military titles, the following data: university titles (professor, agrégé professor in a medical school, prosector, anatomic assistant, head of a laboratory, etc.); hospital physician (physician or surgeon of the hospitals, head of clinic, surgical assistant, hospital intern); specialty (mention particulars, such as directing a surgical clinic, a bacteriologic or roentgenographic laboratory, etc.).

THE SANITARY PROTECTION OF THE TROOPS IN THE FIELD

The novel conditions of trench warfare, the use of previously unfamiliar chemical weapons, such as asphyxiating or toxic gases, and the necessity of protecting our men against poisoned drinking water—all these considerations have necessitated the organization of a new protective service. The medical service has just organized about 200 toxicologic laboratories to examine foodstuffs and drinking waters, to study the ways and means for combating asphyxiating gases and other dangerous chemical products, and to assist in solving all problems of disinfection. The laboratory workers, who are selected after a rigid examination, are in the main pharmacists, court experts, doctors or licentiates in science, or holders of various teaching positions in our colleges and schools. The authorities of the medical service will summon them to Val-de-Grâce, part at a time, to receive instructions with regard to analytic methods to be used and measures to be employed in case the enemy should make use of new deleterious gases. Each laboratory is supplied with material and indispensable chemical reagents, so that it can answer promptly the most urgent question. Thus the drinking waters for troops arriving at new quarters will be analyzed, rejected or purified, foodstuffs will be carefully examined, gases or deleterious products will be identified so that they may be combated with chances of success, and the disinfection of trenches, buildings, clothing, etc., performed under the oversight of a competent specialist.

ARTERIAL INTUBATION AS A SUBSTITUTE FOR IMMEDIATE LIGATURE IN WOUNDS OF LARGE VESSELS

At a recent session of the Académie de médecine Dr. Tuffier, agrégé professor at the Faculté de médecine de Paris and surgeon of the hospitals, gave an interesting address on this subject. Ligaturing large arteries, when these are wounded, immediately suppresses the circulation in the whole limb or organ tributary to the wounded vessel. This sudden suppression may cause gangrene of the limb and necessitate amputation or produce serious functional disturbances. To avoid such results, Tuffier has devised a method that he calls "arterial intubation." It consists in reuniting the two cut ends of the vessel by a special tube which permits the circulation to continue for some days. Suppression of the circulation being progressive, the troubles mentioned above are avoided. The difficulty consists in avoiding the coagulation of the blood in the tube. For this purpose Tuffier makes use of instruments which have been employed in transfusion, namely, silver tubes with extremely thin walls which have been placed in boiling paraffin. This paraffin coating permits the blood to circulate in the tube without coagulating or at any rate makes the coagulation extremely slow.

As an instance in favor of the new method, the applications of which in military surgery may become very numerous,

Tuffier reports the case of a patient with a transverse wound of the elbow, cut by machinery; the forearm and hand were cold and livid, without trace of circulation, on the side of the wound. Seven and a half hours after the wound, a relatively long time, the circulation was reestablished by means of a 2-mm. paraffined tube uniting the brachial artery to the radial artery of the forearm. The circulation was immediately reestablished and the radial pulse was perceived for ten hours; the forearm and the hand became warm. Three days later the tube was removed. There was only a partial success, owing to the small caliber of the tube employed and the relatively considerable time which had elapsed between the injury and the intubation. Still only a part of the hand underwent sloughing. It is, in short, a method which will render valuable service in the conservation of limbs after serious traumatism of the arteries.

PATHOLOGIC AND SIMULATED ALBUMINURIA

At a recent session of the Société de biologie, Drs. A. C. Hollande and J. Gaté presented a study of one of the most interesting questions for military physicians, that of the simulation of albuminuria by the introduction into the urine of the subject under examination, by means of an intravesical injection, of a certain quantity of egg albumin. From their investigations it appears that the presence of egg albumin in human urine may be ascertained by Maurel's fluid (250 c.c. of 33 per cent. sodium hydroxid; 50 c.c. of 3 per cent. copper sulphate; 700 c.c. of pure acetic acid) and precipitins. Important indications are also furnished by the macroscopic and microscopic examination of recently voided urine. The rapid disappearance (within from two to four days) of albumin from the urine of the subject under examination, or disappearance after the lavage of the bladder confirms the results of chemical procedures.

PLANTS SUITABLE FOR USE IN THE SANITATION OF BATTLEFIELDS

In a previous letter (THE JOURNAL, Aug. 28, 1915, p. 813) I mentioned various plants which are suitable for the sanitation of battlefields because they have in high degree the faculty of absorbing rapidly decomposing organic matter. MM. Vilmorin and Mottet have just called attention, in *La Nature*, to various graminaceous and leguminous forage plants, annual and perennial, that might profitably be used in the zones of battle for purifying the land and furnishing harvests of fodder, a most valuable resource in view of the impoverishment of the country with respect to cattle and the need of increasing our herds as rapidly as possible. Among the annual graminaceous plants, the authors mention various species of maize, of millet, of sorghum; among the perennial graminaceous plants, the tall oat grass (*Arrhenaterum elatius*), which is suitable for all kinds of soils, and a number of different species which are suitable for soils of various characters; among the annual leguminous plants, the red clover, the velvet vetch and other vetches, the kidney bean, and some varieties of peas; among perennial leguminous plants, alfalfas, sainfoin, etc. These perennial leguminous plants, because of their very long roots, are most valuable for the purification of battlefields. Annual leguminous plants, such as peas, winter vetches and red clover, sown at the end of summer or in autumn, furnish an early forage crop in the spring, and leave the ground free for the immediate planting of another crop of some such plant as maize or Jerusalem artichoke. Thus the absorption of decomposing organic matter is considerably increased, while the land is producing crops all the year and yielding a double harvest, thereby serving both public salubrity and the interest of agriculture.

Death of Prof. Albert Malherbe

Dr. Albert Malherbe, formerly professor of pathologic anatomy and honorary director of the Ecole de médecine de Nantes, has just died in his seventieth year. He was the author of interesting works on sarcoma. Professor Malherbe had been in the service of the school for forty years. He was a corresponding member of the Académie de médecine.

Foundation of New Chairs in the Faculté de médecine de Paris

On the recommendation of the minister of public instruction, there were created by a decree dated Oct. 7, 1915, a chair of topographic anatomy and a chair of bacteriology in the Faculté de médecine of the University of Paris.

Marriages

JOSEPH HALL WHITELEY, M.D., Bonaparte, Iowa, to Miss Nellie Elizabeth Linder of Libertyville, Iowa, at Des Moines, Iowa, October 27.

GEORGE OSGOOD, M.D., Cohasset, Mass., to Miss Barbara Kendall Bolles of Boston, at her summer home in Cohasset, November 7.

LEE ROY MCBURNEY, M.D., Belt, Mont., to Miss Birdie Josephine Charleson of Chicago, at Great Falls, Mont., October 2.

JOHN MARTIN EARNHARDT, M.D., Mount Pleasant, N. C., to Miss Daisy Myrtle Bost of Philadelphia, November 10.

LYNN BRIAN VAUGHAN, M.D., Hurley, S. D., to Miss Viola Constancia Fraser of Downers Grove, Ill., November 16.

WARREN DEWEESE COY, M.D., Youngstown, Ohio, to Miss Alma Shollenberger of Montgomery, Pa., November 3.

CHARLES WALLACE ARMSTRONG, M.D., Troy, N. C., to Miss Mabel Harris of Roxboro, N. C., November 9.

JAMES BROWN BIGGS, M.D., Bowling Green, Mo., to Miss Edna Major of Sedalia, Mo., November 10.

ERWIN HARE MUDGE, M.D., to Miss Florence Minton, both of Westfield, N. Y., November 3.

JOHN WOODLY WALLACE, M.D., to Miss Helen Archey, both of Concord, N. C., November 12.

JOHN HENRY O'SHEA, M.D., to Miss June Twohy, both of Spokane, Wash., November 24.

JOHN WHITING HARGIS, M.D., to Miss Edythe Grant, both of Pensacola, Fla., October 30.

SILVIES S. FULLER, M.D., to Miss Maud Wilson, both of Idaho Falls, Ida., October 30.

DORRIS MAY PRESSON, M.D., to Mr. Arthur H. Kraus, both of Augusta, Me., October 27.

Deaths

George E. Ranney, M.D. University of Michigan, Ann Arbor, 1863; aged 76; a member from 1866 to 1886, secretary and in 1891 president of the Michigan State Medical Society; president of the Michigan Central Medical Society in 1873; of Lansing, Mich.; division surgeon of the Chicago and Grand Trunk Railroad; surgeon of the Second Michigan Volunteer Cavalry during the Civil War, and a prisoner in Libby Prison, Richmond, Va., who had conferred on him two Congressional medals of honor for gallantry in action; formerly state inspector of communicable diseases; organizer of the State Board of Health and of the Health Department of Lansing; died in the Michigan Karlsbad Sanatorium, Lansing, November 11, from cerebral hemorrhage.

William S. Holliday, M.D. Louisville (Ky.) Medical College, 1874; aged 65; of Monmouth, Ill.; a member of the Illinois State Medical Society and for more than forty years a practitioner of Warren County, Ill.; county physician of Warren County from 1876 to 1882; and coroner from 1881 to 1883; for more than twenty-five years a member of the city council of Monmouth; died in the Monmouth Hospital, November 6, from pulmonary embolism, two weeks after an operation for appendicitis in which a gangrenous appendix was found.

J. B. Gregg Custis, M.D. New York Homeopathic Medical College, New York City, 1878; aged 60; president of the board of medical supervisors of the District of Columbia and formerly president of the American Institute of Homeopathy; a director of the National Capitol Bank, Washington, D. C.; died at his summer home on Grindstone Island, Thousand Islands, N. Y., November 2, from hemorrhage of the stomach.

James Taylor Jones, M.D. Washington University, Baltimore, 1870; aged 59; a member of the Tennessee Medical Association; a Confederate veteran; formerly president of the West Tennessee Medical and Surgical Association and one of the best-known practitioners of that part of the state; died at his home in Jackson, Tenn., November 5, from pleuropneumonia.

Horatio L. Foster, M.D. New York Homeopathic Medical College, New York City, 1881; aged 58; a Fellow of the American Medical Association; formerly mayor of Reed

City, Mich.; local surgeon of the Grand Rapids and Indiana Railroad, and surgeon to the Reed City Sanitarium; died suddenly, November 7, in his car near Orono, Mich.

Arthur Pollard Mulligan, M.D. Bellevue Hospital Medical College, 1893; aged 55; of Salida, Calif.; a member of the Medical Society of the State of California; formerly surgeon for the Southern Pacific System; who was thrown from his buggy in a runaway accident on his ranch near Modesto, Calif.; died in a hospital in Modesto, November 5.

Howard Johnston Lee, M.D. University of Wooster, Cleveland, 1876; aged 64; a Fellow of the American Medical Association; for many years a practitioner of Cleveland, but since 1914 a resident of St. Johnsbury, East, Vt.; a member of the staff of Charity Hospital, Cleveland; died at his home in St. Johnsbury, East, Vt., November 5.

Edgar Miller, M.D. Ensworth Medical College, St. Joseph, Mo., 1905; aged 31; a patient in State Hospital No. 2, St. Joseph, Mo.; formerly a practitioner of Mound City, Mo.; was struck by a Burlington passenger train near Platte River, November 3, and died in a hospital in St. Joseph from his injuries on the next day.

Joseph Albright, M.D. Trinity Medical College, Toronto, 1873; aged 78; a member of the staff of Butterworth Hospital, Grand Rapids, Mich.; for more than forty years a practitioner of Grand Rapids and formerly an alderman and a member of the board of education; died at his home in Grand Rapids, November 8.

Norton Jerome Sands, M.D. College of Physicians and Surgeons in the City of New York, 1868; aged 70; a Fellow of the American Medical Association; of Port Chester, N. Y.; a veteran of the Civil War; a specialist on diseases of the eye; twice president of the village of Port Chester; died at his home, November 14.

Charles A. Church, M.D. New York Homeopathic Medical College, New York City, 1871; aged 76; at one time president of the New Jersey Medical Club; a member of the staff of the Passaic General Hospital, and chief surgeon of St. Mary's Hospital, Passaic, N. J.; died at his home in Passaic, November 12.

John F. Richards, M.D. College of Physicians and Surgeons, San Francisco, 1906; of San Francisco; while on a hunting expedition near Bear Falls, Contra Costa County, Calif., November 7, was accidentally shot by a companion, and died while being taken to the Roosevelt Hospital, Berkeley, Calif.

Charles A. Hollingsworth, M.D. University of Maryland, Baltimore, 1881; aged 58; a member of the Medical and Chirurgical Faculty of Maryland; from 1881 to 1912 a practitioner and druggist of Belair, Md., and since that time postmaster of the city; died at his home, November 10, from nephritis.

Ralph B. McCleary, M.D. Hahnemann Medical College, Chicago, 1878; aged 82; for nearly half a century a practitioner of Monmouth, Ill.; a veteran of the Civil War; coroner of Warren County from 1869 to 1880; died at the home of his daughter, in Monmouth, November 12, from senile debility.

John B. Alexander, M.D. Cincinnati College of Medicine and Surgery, 1875; aged 63; of McPherson, Kan.; formerly a member of the Kentucky State Board of Health and president of the Kansas Academy of Medicine; died in the hospital in Dodge City, Kan., November 5, from disease of the kidney.

William Francis Knox, M.D. University of Pennsylvania, Philadelphia, 1854; aged 84; a Fellow of the American Medical Association; one of the founders and formerly president of the Allegheny County (Pa.) Medical Society; died at his home in McKeesport, Pa., November 12, from pneumonia.

Martin Marmaduke Burchfield, M.D. Chattanooga (Tenn.) Medical College, 1908; aged 31; physician for a coal company at Whiteside, Tenn.; died in a hospital in Chattanooga, November 13, from injuries received several weeks before when his automobile took fire near Hooker Station.

Sherman Miller, M.D. St. Louis College of Physicians and Surgeons, 1893; aged 49; a member of the Missouri State Medical Association; of Mayesburg, Mo.; while returning from Clinton, Mo., in his automobile, was drowned in a ditch by the overturning of his car.

George M. Burdette, M.D. Medical College of Georgia, Augusta, 1861; aged 78; a Fellow of the American Medical Association and a well-known practitioner of Lenoir City, Tenn.; died at his home in that place, November 4, from cerebral hemorrhage.

Frank J. Huizenga, M.D. Rush Medical College, 1895; aged 42; of Rock Valley, Iowa; formerly coroner of Sioux County, Iowa; died at his hospital in Rock Valley, November 9, from injuries received in an automobile accident the week before.

James N. Coons, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1857; Washington University, St. Louis, 1868; aged 86; a retired practitioner of Marion County, Mo.; died at his home in Palmyra, Mo.; November 9, from heart disease.

William P. Powell, M.D. Tulane University, New Orleans, 1869; aged 79; surgeon in the Confederate service during the Civil War and for many years a practitioner and druggist of Willis, Texas; died at his home in that city, November 6.

Nehemiah Davis, M.D. Jefferson Medical College, 1886; Ph.G., Philadelphia College of Pharmacy, 1878; a practitioner of Camden, N. J., and in charge of the Camden Dispensary; died at his home in Camden, October 11.

August W. Duvall, M.D. Jefferson Medical College, 1877; aged 75; a practitioner of South Philadelphia; was taken ill with uremia while on the street, November 13, and died in the Hahnemann Hospital a few hours later.

Francis C. Kienzle, M.D. Northwestern University Medical School, Chicago, 1909; aged 39; a Fellow of the American Medical Association; died in his apartment in Chicago, November 15, from paratonsillar abscess.

Lawrence S. Ball, M.D. American Medical College, Eclectic, Cincinnati, 1855; aged 86; for sixty-five years a practitioner of medicine and druggist of Prairieton, Ind.; a veteran of the Civil War; died at his home, November 1.

David A. Amoss, M.D. Homeopathic Hospital College, Cleveland, 1880; aged 58; of Cobb, Ky.; died in the Rockefeller Institute, New York City, November 3, after an operation for the removal of a tumor of the throat.

Harry Daniel Reutter, M.D. Jefferson Medical College, 1884; aged 54; formerly a member of the Medical Society of the State of Pennsylvania; died at his home in Duncannon, Pa., October 30, from cerebral hemorrhage.

Joseph Shields Howe (license, Pennsylvania, 1882), aged 78; a practitioner of Industry and Rochester, Pa., for forty-five years and a veteran of the Civil War; died at the home of his daughter in Los Angeles, October 28.

Alexander C. Freeman (license, Indiana, 1890), aged 81; for more than forty years a practitioner of Kokomo, Ind.; was struck by a passenger train near his home, November 1, and died from his injuries two hours later.

Buehler Shoup Boyer, M.D. University of Maryland, Baltimore, 1911; aged 30; medical examiner for the Baltimore and Ohio System at Parkersburg, W. Va.; died in that place, August 8, from subacute nephritis.

John F. Brendel, M.D. Physio-Medical College of Indiana, Indianapolis, 1892; aged 62; formerly a Fellow of the American Medical Association; died at his home in Zionsville, Ind., November 5, from arteriosclerosis.

Samuel L. Nash, M.D. University of Michigan, Ann Arbor, 1863; University of Victoria College, Coburg, Ont., 1865; aged 83; died at his home in Bath, Ont., July 7, from carcinoma of the stomach.

William Lawrence Bailey, M.D. Chattanooga (Tenn.) Medical College, 1907; aged 40; a Fellow of the American Medical Association; died at his home in Coronaca, S. C., October 20.

Frank Dexter Harter, M.D. Chicago Homeopathic Medical College, 1900; aged 42; died at his home in Grand Rapids, Mich., October 31, from septicemia due to an ulcerated tooth.

John A. Murphy, M.D. Jefferson Medical College, 1848; aged 93; of Island Mills, Tenn.; died in Johns Hopkins Hospital, Baltimore, November 4, after an operation for prostatitis.

Frederick Russell S. Brown, M.D. Hahnemann Medical College, Chicago, 1898; aged 45; died at his home in Doerun, Ga., July 30, from intestinal obstruction.

John A. Orr, M.D. University of Louisville, Ky., 1877; aged 64; of Verona, Miss.; died in Memphis, Tenn., October 24, from appendicitis.

John Jefferson Manard, M.D. Tennessee Medical College, Knoxville, 1895; of Morristown, Tenn.; died near that place about November 2.

J. R. Sample, M.D. New Orleans School of Medicine, 1886; aged 74; of Summit, Miss.; died at the home of his daughter in Jackson, Miss., November 8, from acute gastritis.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

LAXATIVE BROMO QUININE

"Laxative Bromo Quinine," which for years has been fraudulently advertised under the claim that it "Cures a Cold in One Day," is put on the market by the Paris Medicine Company, St. Louis, Mo. Apparently, the business was founded by one E. W. Grove, president of the concern, who is said to have amassed a fortune in the business. As one newspaper has said, the Paris Medicine Company "has changed its promoter from a salaried drug clerk to a multi-millionaire in twenty years' time."

In addition to Laxative Bromo Quinine, the Paris Medicine Company also puts on the market "Dr. Porter's Antiseptic Healing Oil," "Pazo's Pile Ointment" and "Grove's Pepsin Coffee." While Laxative Bromo Quinine is sold as a "headache remedy," "Grove's Pepsin Coffee" is sold under the claim that it is "the only harmless headache remedy"!

Some of the claims that have been, or are being made for Laxative Bromo Quinine are, in addition to the slogan already quoted:

"Cures Grippe—prevents Grippe."

". . . removes the cause of Colds, Coughs, Headache, Neuralgia, Grippe, Feverish and Malarious Conditions. . . ."

"The quinine that does not affect the head."

"Laxative Bromo Quinine will be found better than the ordinary quinine."

"Relieves a Cold in the Head in the shortest possible time."

"For Colds, Coughs, La Grippe, Bronchitis, Catarrh and Headache."

"AN IMPROVED QUININE, DOES NOT CAUSE NERVOUSNESS NOR RINGING IN THE HEAD."

Laxative Bromo Quinine Tablets were subjected to analysis in the Chemical Laboratory of the American Medical Association. The report of the chemist, which will appear in full in the Annual Report of the Laboratory for 1915, may be summarized as follows:

When you feel a Cold coming on
think of Laxative Bromo Quinine
Cures a Cold in One Day
IT acts as a tonic-laxative and removes the cause of all colds and also "relieves the feverish conditions and headache which are usually associated with colds."
Colds cause Headache, Neuralgia and Grip—Laxative Bromo Quinine removes the cause. This remedy is better than the ordinary Quinine as it combines the tonic and other properties of Quinine, with a laxative and can be taken by anyone without causing nervousness or ringing in the head
—but remember there is Only One
"Bromo Quinine"
To Get The GENUINE, Call For The Full Name
Laxative Bromo Quinine
USED THE WORLD OVER TO CURE A COLD IN ONE DAY
E. W. Grove

Typical advertisement (from Chicago *Daily News*) of Laxative Bromo Quinine.

CHEMIST'S REPORT

Laxative Bromo Quinine comes in the form of light brown tablets, possessing a faint odor and a bitter, rather sharp taste. Each tablet is stamped with the letters "L. B. Q." Qualitative tests showed the presence of aloin or aloes, quinin or cinchona alkaloids, phenacetin, caffein, starch, small quantities of chlorid and sulphate and a trace of bromid. Quantitatively, the tablets were found to have:

Phenacetin	44.78 per cent.
Caffein	4.32 per cent.
Quinin (or cinchona alkaloids)	8.91 per cent.
Starch	17.58 per cent.
Ash	5.00 per cent.
Bromid (Br')	0.51 per cent.
Chlorid (Cl')	0.40 per cent.
Sulphate (SO_4'')	0.20 per cent.
Aloin or aloes, and undetermined (by diff.)	18.29 per cent.

From the analysis it is concluded that Laxative Bromo Quinine is a mixture consisting mainly of phenacetin and aloin, with smaller quantities of caffein and quinin and only a trace of bromid.

Based on the foregoing, it appears that each tablet of Laxative Bromo Quinine (weighing 4½ grain) contains, as its essential ingredients:

Phenacetin (about)	2 grains
Caffein	½ grain
Quinin or cinchona alkaloids	2/5 grain
Aloin or aloes	Undetermined

While the name "Bromo Quinine" naturally gives the impression that bromin and quinin are the important ingredients, analysis shows that the bromid content is only 1/200 of the whole and corresponds to only about 1/30 of a grain of potassium bromid or 1/600 part of the pharmacopeial dose.

The formula for Laxative Bromo Quinine Tablets, apparently, was changed about the time the federal Food and Drugs Act went into effect. At any rate, an analysis made for the American Medical Association in 1905 indicated that, in addition to the laxative principle, the tablets contained acetanilid, quinin sulphate and caffein. No trace of bromin was found at that time. An analysis made by the state chemists of North Dakota, and published in the Annual Report of the North Dakota Agricultural Experiment Station for 1907, also failed to disclose the presence of bromin. According to this report, when the North Dakota authorities notified the Paris Medicine Company of the results of their analysis, the company stated that previous to the enactment of the federal Food and Drugs Act "they used the combined alkaloids of cinchona . . . as found in the cinchona bark, but were advised by the government to use some form of bromid in their preparation, and that they had since been using the bromid and quinin." The North Dakota chemists were thereon furnished a sample of the "New product," which "on analysis showed the presence of a small amount of quinin and bromin."

The attempt of the manufacturers of Laxative Bromo Quinine to make the public believe that this product is "an improved quinin" and "better than the ordinary quinin" as well as "the quinin that does not affect the head," is entirely in keeping with the general policy of falsehood and deceit so characteristic of the nostrum business. The real reason, of course, that Laxative Bromo Quinine Tablets do not affect the system in the same way as ordinary quinin is that there is practically no quinin present. While the average dose of alkaloidal quinin is 4 grains, the amount of this substance in Laxative Bromo Quinine is but 2/5 of a grain. Put another way it means that, in order to get an ordinary pharmacopeial dose of quinin, it would be necessary to take ten Laxative Bromo Quinine tablets, and if this were done, the person taking it would get 20 grains of phenacetin, a dangerously poisonous dose.

Again referring to the disparity between the composition of this preparation and the name, it is worth noting that one of the rulings, made by the officials who are intrusted with the enforcement of the federal Food and Drugs Act, declares that "an article containing more than one . . . active medicinal agent is misbranded if named after a single constituent." As the active medicinal agents in Laxative Bromo Quinine are not bromid or quinin but rather phenacetin and aloin, it seems strange that the company putting out this product has so far escaped prosecution under the federal law.

Laxative Bromo Quinine in addition to containing the dangerous heart-depressing and habit-forming drug, phenacetin, is a fraud both in name and in method of exploitation. In a full-page advertisement appearing in the *National Druggist* some months ago, the Paris Medicine Company stated that it was "giving the retail drug trade a much larger profit than they receive on any other leading advertised article." If this is true and so long as there are millions in the sale of this preparation, the publication of the facts just given will not, presumably, greatly affect the business.

SOME MISCELLANEOUS NOSTRUMS FOR EXTERNAL APPLICATION

PERRY'S MOTH AND FRECKLE LOTION

Perry's Moth and Freckle Lotion Compound, according to the Report of the Connecticut State Chemists for 1914, is put on the market by Brent Good & Co., New York City. According to these chemists, the preparation is another one of the bichlorid of mercury solutions containing in addition a small amount of a lead salt. The Connecticut report, commenting on the claim in the circular that this "lotion is for the safe and speedy eradication of moth patches, freckles and tan" says: "No preparation containing 16.5 parts of corrosive sublimate per 1,000 can be considered a 'safe' remedy even for external use."

PYROXIN

Pyroxin, a preparation sold on the "prescription fake" method, is sold as an eyebrow and eyelash grower, for example:

"Plain Pyroxin applied to thin, straggly eyebrows with finger tips causes them to grow in thick and beautiful."
"Eyelashes will come in long and curly if Pyroxin is applied to the roots with forefinger and thumb."

This nostrum has been the subject of reports by the state chemists of North Dakota, New Hampshire, Indiana, Ohio, Kansas and Michigan. These reports agree in exposing Pyroxin as being essentially perfumed vaseline! According to the Indiana State Board report, while this stuff sells for $1 a package, the cost of the ingredients is 2 cents.

ROSE-KAYLOIN

Rose-Kayloin is another one of the preparations put out by the Blackburn Products Co., Dayton, Ohio. It is advertised in the "Dr. Lewis Baker" fake "health department." Rose-Kayloin, according to the reports of state chemists, is a rose-scented, pink powder, containing, according to the chemists of the Indiana State Board of Health:

Sulphur	80 per cent.
Potassium carbonate (washing soda)	15 per cent.

This stuff is recommended in the Dr. Lewis Baker "Answers to Correspondents" for numerous conditions. For instance:

"Valentine:—A person afflicted with chronic ulcers, itching skin and constipation, as you say you are, usually has frequent attacks of indigestion, causing the poisons of fermented food to be absorbed into the blood. This is manifested by pimples, ulcers, itching, etc. I have had great success prescribing an ointment of rose-kayloin, 2½ drams; lanolin, 2 oz. Mix and apply to the skin or sores two or three times daily after a thorough cleansing with soap and water."

And then this:

"Katherine Anxious:—You ask for a preparation to remove freckles (and tan). I don't think well of face creams, but this face wash is most effective if persistently and regularly used. It removes tan and freckles by absorption: Potassium Carbonate 3 drams, Sodium Chloride 2 drams, Rose-Kayloin, 2½ drams (package), Orange Flower Water 2 oz., Rose Water 8 oz. Mix and apply two or three times daily as a face wash, permitting it to dry on the face."

Other conditions in which Rose-Kayloin—in various combinations—is recommended, are "blackheads, pimples, boils, sore spots, and large pores in skin of the face," also "eczema," "sty on the eyelids," "itching piles," etc.

MME. RUPPERT'S FACE BLEACH

"Mme. Ruppert's World Renowned Face Bleach" is put on the market by Mme. A. Ruppert Co., New York City. According to the report of the Connecticut Agricultural Experiment Station for 1914, the label declares the presence of 6 per cent. alcohol. According to the Connecticut chemists the preparation is an alcoholic solution of bichlorid of mercury containing four parts of the mercury salt to 1,000. It also contains a small amount of benzoin. This dangerous poison, according to the same authority, "is falsely labeled harmless.'"

STILLMAN'S FRECKLE CREAM

Stillman's Freckle Cream has been reported on both by the Indiana State Board of Health in its bulletin on "Medical Frauds" and by Dr. Wiley in his book "1001 Tests." The preparation is put on the market by the Stillman Freckle Cream Co., Aurora, Ill., and advertised under such claims as:

"Freckles, tan or liver spots positively removed by using Stillman's Freckle Cream."

According both to Dr. Wiley and to the state chemists of Indiana, this preparation is another one of the ammoniated mercury pastes and as such is a dangerous caustic poison.

TAN-A-ZIN

Tan-A-Zin is said to be put on the market by John A. Brown, Washington, Kan. It is another one of the "Complexion Beautifiers" and, according to the state chemists of North Dakota, has for its essential ingredient ammoniated mercury.

WRINKLE LOTION

"Wrinkle Lotion" put on the market by Sarah Thompson, Terre Haute, Ind., is according to the bulletin on "Medical Frauds" of the Indiana State Board of Health, sold under the claim that it removes wrinkles. The same authority declares that it contains the following:

Alum	7 per cent.
Glycerin	29 per cent.
Water	64 per cent.

The Indiana chemists further state that the stuff sells at 50 cents and the cost of the ingredients is 3 cents.

ZINTONE

Zintone is another of the Cooper Pharmacal Company's nostrums that has been advertised as one of several "Remarkable Formulas Revealed by Valeska Suratt." Some of the claims that have been made for Zintone are:

"Produces faultless complexion quickly."
"It gives the skin a superb pinky whiteness, removes all muddiness and spots in a very short time."
"In a few weeks your complexion will be almost perfect with a bloom and freshness that is adorable."

This marvel has been reported on by the state chemists of Indiana, Kansas, Michigan and Connecticut. According to the latter, Zintone is a grayish white powder perfumed with vanillin and having the following composition.

Borax	23 per cent.
Stearic acid and soap	77 per cent.

DISCLOSING THE FORMULA

What One Druggist Thinks of the Plea that Formula Disclosure Means Ruin

The frantic efforts of the "patent medicine" fraternity to discredit the Health Department of New York City in its laudable effort to give the public some measure of protection against fraudulent "patent medicines" has been referred to at various times in THE JOURNAL. Nostrum mongers always have fought the disclosure of formulas or, in fact, the giving of any information that would make it possible for those who wish to drug themselves to know what they are taking. The reason is obvious. Take away the mystery from a "patent medicine" and you have taken away its most potent asset.

Several "patent medicine" concerns have written to New York druggists urging them to refuse to obey the law that is to go into effect on the last day of this year requiring the statement of the potent ingredients of all "patent medicines" either to be filed with the Department of Health or to be plainly printed on the labels. More than one New York druggist has openly resented this offer on the part of the "patent medicine" makers of protection against legal proceedings, if they will violate the law. In a recent issue of the New York *Tribune* a letter from one such druggist—Mendel Zagat—is printed. The letter was addressed to Smith, Kline & French Co. of Philadelphia, the purveyors of "Dr. Hand's Remedies." In replying to the letter received

from Smith, Kline & French Co. Mr. Zagat, in the name of his company, thanks the concern for its letter but adds:

"We feel, however, that we shall not have to avail ourselves of your kind offer to protect us in breaking the law."

Further, the druggist suggests, that "no manufacturer producing an honest product should be averse to obeying Dr. Goldwater's regulations." Moreover, Mr. Zagat points out that the fact that Smith, Kline & French Co. are opposed to giving the Health Department a statement of the ingredients of its preparations "is strong presumptive evidence that the claims you make for these preparations are false." Then follows this statement which, coming from an expert pharmacist, nails the specious falsehood so loudly and widely put forward by the nostrum interest:

"That you are afraid of revealing the nature of your preparations to your competitors is absurd. There is no preparation on your list that cannot be matched or bettered by one in the National Formulary or the United States Pharmacopeia. The sale of your preparations, and of others like them, depends on advertising and not on therapeutic value."

Truth, the whole truth and nothing but the truth and, as Mr. Samuel Hopkins Adams says in commenting on the letter as it appears in the *Tribune:*

"What is true of the Smith, Kline & French Co.'s secret preparations is true of practically all secret nostrums. The secrecy is but a pretense, a 'bluff.' It is reduced to the lowest terms of absurdity by the clear logic of Mr. Zagat's professional and expert knowledge."

Correspondence

The Choice and Technic of the Anesthetic

To the Editor:—The results of the anesthetic experiments of A. D. Bevan, as described in his excellent paper (The Journal, Oct. 23, 1915, p. 1418), are very interesting and should be of benefit to any one interested in this important branch. With one item, however, I take exception, that is, the statement that: "warm ether possesses no advantage over cold." The work and experiments of anesthetists prove otherwise.

To a patient suffering from shock do we apply cold externally or internally? Nay, rather we apply heat. Why is chloroform safer in warm climates than in cold? Because it is warmer. Any fluid in a can or bottle is warmer in summer than in winter. No matter how well heated be a room, the air in it cannot prevent the formation of frost on the window. It cannot keep the window warm. The air in a comfortably heated room is pleasant to breathe. The chilliness of very cold air as we step outside of the house is unpleasant to our mouth, nostrils, lungs. Even after we have become accustomed to it, a deep breath is not pleasant. Does not the same principle apply to ether? Cold ether causes the formation of "snow" on the mask. Warmed, it does not. Cold causes contraction of tissues. Heat causes relaxation and is soothing. Warm ether causes less coughing and is more pleasant to the patient, especially if given in warm vapor with oxygen. The opinion of anesthetists is opposed to that of Dr. Bevan.

A. S. McCormick, M.D., Akron, Ohio.

A National Examination Board for License to Practice

To the Editor:—In The Journal, Nov. 6, 1915, p. 1652, attention was called to the board examinations for entrance to colleges of arts, and to the fact that they were held all over the country simultaneously; that they were recognized as sufficient by all colleges, and the fees received made the board practically self-supporting. It is formed by representatives of universities and high schools or preparatory schools. The examination questions are prepared by experts, and the answers are graded by experts.

If this is possible for the many colleges in the country, how much easier it would be for the fewer state licensing boards if those of all, or at first even most of the states should form a similar board for examining graduates in medicine for license to practice. If examinations were held by such a representative board there could be no question as to the justice of reciprocity, and the long desired national examination would be attained. The laws of the states do not make it necessary for the members of the state boards to examine students personally, but to see to it that suitable examinations are held. Nothing would help more to make the standards uniform and high throughout the country.

N. S. Davis, M.D., Chicago.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MEDICAL JOURNALS AND HONEST ADVERTISING

To the Editor:—Referring to your editorial "May We Count on Your Assistance?" (Current Comment, The Journal, November 13, p. 1735): The Association, which now renders such valuable aid to its members by keeping them informed as to clean advertised drugs, could still further aid physicians by publishing at intervals a list of those medical journals that "are making a creditable stand for decency in advertising." In your position you can more readily separate the sheep from the goats. It may be a delicate task, but it is one that would be an aid to the rank and file of the profession.

A. A. Stafford, M.D., San Francisco.

To the Editor:—Can you send me a list of medical journals (not state journals) that are devoted to therapeutics or the diagnosis and treatment of internal diseases, and that contain no objectionable advertisements?

G. A. Chilgren, M.D., Burlington, Iowa.

To the Editor:—Your editorial "May We Count on Your Assistance?" has appealed to me. I have just notified four journals to discontinue, and for heaven's sake to clean up their advertising pages. Please send me a list of good journals on surgery, gynecology and children's diseases.

Leo W. Chilton, M.D., Canyon City, Ore.

Answer.—The following journals limit advertising of proprietary medicinal preparations to announcements of such products as have been accepted for New and Nonofficial Remedies by the Council on Pharmacy and Chemistry of the American Medical Association:

American Journal of Diseases of Children, American Medical Association, 535 North Dearborn Street, Chicago, monthly, $3.

American Journal of the Medical Sciences, Lea and Febiger, 706 Sansom Street, Philadelphia, monthly, $5.

American Journal of Obstetrics and Diseases of Women and Children, William Wood Company, 51 Fifth Avenue, New York, monthly, $5.

American Journal of Physiology, Baltimore, monthly, $5.50.

American Journal of Roentgenology, New York, monthly, $5.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans, monthly, $2.

Archives of Ophthalmology, New York, bimonthly, $5.

Arizona Medical Journal, Phoenix, Ariz., monthly, $2.

Archives of Internal Medicine, American Medical Association, 535 North Dearborn Street, Chicago, monthly, $4.

Boston Medical and Surgical Journal, 101 Tremont Street, Boston, weekly, $5.

Bulletin of the Medical and Chirurgical Faculty of Maryland, Baltimore, monthly, 25 cents.

Cleveland Medical Journal, 2318 Prospect Avenue, Cleveland, monthly, $2.

California State Journal of Medicine (California and Nevada), San Francisco, monthly, $1.

Colorado Medicine, Denver, monthly, $2.

Journal of the American Medical Association, American Medical Association, 535 North Dearborn Street, Chicago, weekly, $5.

Journal of the Arkansas Medical Society, Little Rock, Ark., monthly, $1.

Journal of Experimental Medicine, New York, monthly, $5.

Journal of the Florida Medical Association, Jacksonville, Fla., monthly, $1.
Journal of the Medical Association of Georgia, Augusta, Ga., monthly, $1.
Journal of the Indiana State Medical Association, Fort Wayne, Ind., monthly, $1.
Journal of Infectious Diseases, 629 South Wood Street, Chicago, bimonthly, $5.
Journal of the Iowa State Medical Society, Des Moines, Iowa, monthly, $2.
Journal of the Kansas Medical Society, Topeka, Kan., monthly, $2.
Journal of Laboratory and Clinical Medicine, C. B. Mosby Company, St. Louis, monthly, $3.
Journal of the Maine Medical Association, Portland, Me., monthly, $2.
Journal of Medical Research, Boston, irregularly, $4.
Journal of the Michigan State Medical Society, Grand Rapids, Mich., monthly, $3.50.
Journal of the Missouri State Medical Association, St. Louis, monthly, $2.
Journal of the Medical Society of New Jersey, Orange, N. J., monthly, $2.
Journal of the Oklahoma State Medical Association, Muskogee, Okla., monthly, $2.
Journal of the South Carolina Medical Association, Anderson, S. C., monthly, $2.
Journal of the Tennessee State Medical Association, Nashville, Tenn., monthly, $2.
Kentucky Medical Journal, Bowling Green, Ky., monthly, $2.
Memphis Medical Monthly, Goodwyn Institute, Memphis, Tenn., monthly, $1.
New Mexico Medical Journal, Las Cruces, N. M., monthly, $2.
New York State Journal of Medicine, New York, monthly, $1.
Northwest Medicine (Oregon, Washington, Idaho and Utah), Seattle, monthly, $2.
Ohio State Medical Journal, Columbus, Ohio, monthly, $2.
Old Dominion Journal of Medicine and Surgery, 116 East Franklin Street, Richmond, Va., monthly, $2.
Ophthalmic Record, Chicago, monthly, $4.
Ophthalmology, Seattle, quarterly, $5.
Pan American Surgical and Medical Journal, New Orleans, monthly, $2.
Pennsylvania Medical Journal, Athens, Pa., monthly, $2.
Southern Medical Journal, Birmingham, Ala., monthly, $2.
Surgery, Gynecology and Obstetrics, Surgical Publishing Company, 30 North Michigan Avenue, Chicago, monthly, $5.
Texas State Journal of Medicine, Fort Worth, Texas, monthly, $1.50.
Wisconsin Medical Journal, Milwaukee, Wis., monthly, $2.
West Virginia Medical Journal, Huntington, W. Va., monthly, $1 (after Jan. 1, 1916).

TREATMENT OF FRIEDREICH'S ATAXIA

To the Editor:—One of our members requests us to furnish him with information on the modern treatment of Friedreich's ataxia. We can find considerable in the recent literature on hereditary ataxias but little, if anything, along the line of treatment. Can you help us out? Even though this condition is generally considered hopeless, there must have been some serious efforts made toward amelioration of symptoms and retardation of progress of the disease.

SAN DIEGO MEDICAL LIBRARY ASSOCIATION,
ROBERT POLLOCK, M.D., Secretary.

ANSWER.—As this disease, so far as we know, is always inherited, as a rule begins in early childhood and consists of maldevelopment of the central nervous system, especially of the cerebellum and certain fiber systems of the spinal cord, it is obvious that treatment can only be symptomatic. In every suspected case, however, there should be a Wassermann test and complete examination of the cerebrospinal fluid, including the Lange colloidal gold test, as congenital syphilis may be responsible for an almost identical clinical picture; in fact, ancestral syphilis is given as a factor in the true Friedreich's ataxia. If either patient or parents give evidence of syphilis, specific treatment should be used. According to Dana, arsenic may give temporary relief in the early stages. For the most distressing symptom, the ataxia, we fortunately have an important remedy, the so-called Frenkel reeducative exercises, which may be applied in this disease in the same manner as in tabes. The object is to reeducate the limbs by means of the eyes, and by utilizing to the full those pathways which are not degenerated. The principle and methods are fully set forth in H. S. Frenkel's "Tabetic Ataxia: Its Treatment by Systematic Exercises," translated by L. Freyberger (Philadelphia, P. Blakiston, Son & Co., 1902, price $3).

CARBOHYDRATE CHANGES IN BAKING AND BOILING POTATOES — NATURE OF EDEMA IN CARDIAC WEAKNESS

To the Editor:—1. Please describe the carbohydrate changes involved in baking a potato and boiling one. What is it that accounts for the sweeter taste of a baked potato?

2. Is edema of the extremities in cardiac pathology construed as a conservative process or not?

R. W. ADAMS, M.D., Newport Center, Vt.

ANSWER.—1. When a potato is boiled, the starch, which is granular in a raw potato, is converted into the so-called soluble starch, a more readily digestible form. The temperature of boiling is not sufficient, in the short time required to boil a potato, to hydrolyze much of the starch. In baking a potato, a crust is formed on the outer surface. The temperature is higher within the potato because the tension is greater, owing to the confining of the water present in the potato. With a higher temperature and tension—as occurs in baking—there is more hydrolysis than in boiling. The starch is converted into dextrin, which accounts for the sweeter taste of a baked potato.

2. The edema which occurs in cardiac weaknesses is not a conservative process. It would more likely be considered a progressive process. As the edema increases, the difficulty of the heart becomes greater and there is edema of the heart muscle, thus increasing the inability of the heart muscle to perform its work. In other edematous tissues the interference of the circulation must be considered as preponderantly adverse to the tissues affected as well as to the heart.

IODEOL AND IODAGOL

To the Editor:—The salesman has been making such extravagant claims for Iodeol and Iodagol that I am sending the literature for investigation.

FRANCIS SCHILL, M.D., Johnstown, Pa.

ANSWER.—Both Iodagol and Iodeol are said to be manufactured by E. Viel & Co., Paris. They are imported into this country by David B. Levy, Inc. Both appear to be iodin preparations. They are called in the advertising literature, "Electro-Chemical Colloidal Iodine." Iodeol is recommended in tuberculosis, pneumonia, typhoid, asthma, syphilis and other conditions as "iodine with all its potentialities . . . stripped of all its drawbacks—non-irritating, non-caustic, non-toxic, non-cumulative, injectable without pain"; "many times more active than ordinary iodine." Iodagol is recommended in specific urethritis, cystitis, arthritis, etc., under similar claims. According to the advertising literature, "It is, in fact, known that iodine when brought into the colloidal state increases its action tenfold and diminishes in toxicity to the same extent." No such fact is generally known; it would be difficult to demonstrate, and no proof is offered. Nor is any adequate evidence offered in support of the therapeutic claims made for Iodeol and Iodagol, although the assertions as to the action of Iodeol in tuberculosis and pneumonia, in particular, are susceptible of test by laboratory and animal investigation. Our correspondent is justified in calling the claims "extravagant."

THE TEACHING OF PEDIATRICS

To the Editor:—Can you furnish me references to articles on the teaching of pediatrics?

C. D. W.

ANSWER.—The following is a list of recent articles on this subject:

Marfan, A. B., Pediatrics in the Medical Course, *Presse méd.*, Sept. 16, 1911.
Medin, O.: Teaching of Pediatrics at the University of Stockholm, *Jahrb. f. Kinderh.*, November, 1911.
Improvement of Instruction in Pediatrics, Berlin Letter, THE JOURNAL, March 11, 1911, p. 756.
Epstein, J.: Special Training in Pediatrics, *Am. Jour. Obst.*, July, 1914.
Rhodes, C. A.: Present Status of Pediatric Teaching in Sixteen Southern States Forming Southern Medical Association, *Georgia Med. Assn. Jour.*, August, 1914.
Royster, L. T.: The Pediatrician and the Section on Diseases of Children, THE JOURNAL, Aug. 14, 1915, p. 567.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALASKA: Juneau, Jan. 4, 1916. Sec., Dr. Harry C. DeVighne, Juneau.

ARIZONA: Phoenix, Jan. 4-5, 1916. Sec., Dr. John Wix Thomas, National Bank of Arizona Bldg., Phoenix.

CALIFORNIA: Los Angeles, December 14. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

COLORADO: Denver, Jan. 4, 1916. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DELAWARE: Dover and Wilmington, December 14. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

FLORIDA: Jacksonville, December 7-8. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

KENTUCKY: Louisville, December 7-9. Sec., Dr. A. T. McCormack, Bowling Green.

LOUISIANA: New Orleans, December 2-4. Sec., Dr. E. L. Leckert, 716 Macheca Bldg., New Orleans.

MARYLAND: Regular, Baltimore, December 14. Sec., Dr. J. McP. Scott, Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

MINNESOTA: Minneapolis, Jan. 4-7, 1916. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MISSOURI: St. Louis, December 13-15. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

NORTH DAKOTA: Grand Forks, Jan. 4-7, 1916, Sec., Dr. G. M. Williamson, Grand Forks.

OHIO: Columbus, December 7-9. Sec., Dr. George H. Matson, Columbus.

OREGON: Portland, Jan. 4, 1916. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

RHODE ISLAND: Providence, Jan. 6-7, 1916. Sec., Dr. Gardner T. Swarts, Providence.

UTAH: Salt Lake City, Jan. 3, 1916. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

VIRGINIA: Richmond, December 14-17. Sec., Dr. J. N. Barney, Fredericksburg.

WASHINGTON: Walla Walla, Jan. 4, 1916. Sec., C. N. Suttner, Baker Bldg., Walla Walla.

Oklahoma April Report

Dr. John W. Duke, secretary of the Oklahoma State Board of Medical Examiners, reports the written examination held at Oklahoma City, April 13-15, 1915. The total number of subjects examined in was 10; total number of questions asked, 95; percentage required to pass, 70. The total number of candidates examined was 12, of whom 9 passed and 3 failed. Eighteen candidates, including 2 osteopaths, were licensed through reciprocity. Seven candidates were granted reregistration licenses and 1 candidate's license was reinstated. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Indiana University	(1914)	84
University of Louisville	(1914)	71
Baltimore Medical College	(1895)	71
Baltimore University	(1904)	73
College of Physicians and Surgeons, Baltimore	(1907)	78
St. Louis University	(1914)	77
Meharry Medical College	(1914)	74, 82
Memphis Hospital Medical College	(1911)	72
FAILED		
University of Arkansas	(1912)	66
Meharry Medical College	(1914)	40.1
Vanderbilt University	(1893)	58.3

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
College of Physicians and Surgeons, Little Rock	(1911)	Arkansas
University of Arkansas	(1907)	Arkansas
Denver and Gross College of Medicine	(1904)	New Mexico
George Washington University	(1911)	Maryland
Atlanta School of Medicine	(1911)	Georgia
Hahnemann Medical College and Hospital, Chicago	(1896)	Kansas
Illinois Medical College	(1902)	Michigan
Kansas Medical College	(1907)	Kansas
Detroit College of Medicine	(1910)	Michigan
Eclectic Medical University, Kansas City	(1906)	Arkansas
Marion-Sims-Beaumont Medical College	(1903)	Missouri
St. Louis University	(1914)	Missouri
College of Physicians and Surgeons, Memphis	(1911)	Tennessee
Memphis Hospital Medical College	(1911)	Arkansas
Vanderbilt University	(1905)	Tennessee
University of Vermont	(1905)	Vermont

The following questions were asked:

ANATOMY

1. How much of length of spinal column is made up by intervertebral disks? 2. At what point does the spinal cord terminate? 3. Describe arrangement of gray and of white matter in spinal cord. 4. Give origin and termination of thoracic duct. 5. Give shape, weight and position of heart. Describe the pericardium. 6. Into what two principal parts is the kidney divided? In which part are the functionating structures situated? 7. Where is Petit's triangle? How is it formed? 8. How would you differentiate a movable kidney from a wandering spleen by palpation? 9. Of what artery is the middle meningeal a branch? What relation does it bear to the dura mater? 10. Give average number of red and of white blood corpuscles in a cm. of blood.

CHEMISTRY

1. What is the chemical antidote for iodin? 2. Chemically, what is albumin? 3. How would you determine, chemically, whether a urinary deposit was composed of urates or phosphates? 4. How does potassium permanganate act as a disinfectant? 5. What is the composition of the pancreatic juice? 6. What is the difference between an alloy and an amalgam? 7. What is chloroform? Give the chemical name and formula and properties. 8. What element is constantly present in the coloring matter of the blood and what elements are common in all acids? 9. Complete the equation $CaCO_3 + 2HCH = ?$ 10. Give antidotes for following: Carbolic acid, formaldehyd, nitric acid.

SURGERY

1. Give a classification of burns and constitutional symptoms. 2. What diseases attack the antrum of Highmore? 3. What are the causes of esophageal stricture? 4. Define volvulus and give its treatment. 5. What are the predisposing and what are the exciting causes of abdominal hernia? 6. Describe dermoid cysts. In what situations are they most commonly found? 7. What are the chief surgical diseases of the groin? 8. Give symptoms of stone in the kidney and treatment of same. 9. Give diagnosis and treatment of floating kidney. 10. What are the causes of ischiorectal abscess? Give treatment.

MATERIA MEDICA AND PRACTICE

1. How soon is Widal's test positive in typhoid fever? 2. How would you treat average case of intestinal stasis? 3. Treat the average case of incipient tuberculosis. 4. What is the incubation period of scarlet fever? 5. Diagnose and treat mitral regurgitation with broken compensation. 6. Give average dose of sulphate of morphin. 7. What is the emetic dose of apomorphin? 8. What effect has digitalis on heart and why? 9. What is an astringent? Give example. 10. Give hypnotic dose of chloral hydrate.

GYNECOLOGY

1. Diagnose retroversion and differentiate it from retroflexion. 2. Differentiate pyosalpinx from ectopic pregnancy. 3. Give difference in the bleeding due to carcinoma of cervix and that of submucous fibroid. 4. Name some dangers of sharp curets. 5. When should the radical breast operation be done?

OBSTETRICS AND HYGIENE

1. Describe the changes which take place in the generative organs during pregnancy. 2. What conditions may be mistaken for pregnancy? 3. On making the first examination of a woman in labor, how would you proceed and what would you expect to learn? 4. What is dry labor? How does it differ from normal labor, and what are the dangers accompanying it? 5. How would you distinguish one shoulder from the other where the hand and arms could not be felt? 6. How soon after delivery would you ligate the cord? How should it be dressed? 7. What condition during the third stage of labor would cause you to insert your hand into the uterus? 8. Give the external diameters of the pelvis. 9. Give a patient having tuberculosis instruction to prevent communicating it to other persons. 10. What are the most common poisons occurring in food. How may we prevent this occurrence?

PHYSICAL DIAGNOSIS

1. Name the normal thoracic landmarks. 2. Describe the phthisical thorax. 3. What is dyspnea? 4. Describe the emphysematous thorax. 5. Name the types of dyspnea. Their causes. 6. Define cyanosis. How recognized? 7. Diagnose displacement of the larynx and give causes. 8. Describe bronchial breathing. 9. Name the respiratory sounds. 10. Diagnose acute bronchitis.

TOXICOLOGY AND MEDICAL JURISPRUDENCE

1. In a case of death by poison, what organs would you select for chemical examination, and how would you prepare them for the chemist? 2. Give symptoms caused by eating poisonous fungi. In fatal cases how soon does death occur? 3. What are the important symptoms of poisoning by digitalis? 4. Name maximum dose of (a) tinct. of opium, (b) heroin, (c) white arsenic. 5. Give symptoms of poisoning from cocain and the treatment. 6. What is the duty of the state regarding preventable diseases? Name ten preventable diseases. 7. Define medical jurisprudence. 8. When may abortion be legally permitted? 9. In case of poisoning, the nature of the poison being unknown, how should the case be handled? 10. What is the best method or course to pursue in order to detect feigned mental disorder?

BACTERIOLOGY AND PATHOLOGY

1. Give the pathology of dry and moist gangrene. 2. What is eccentric and concentric atrophy? 3. Describe briefly calcareous infiltration. 4. What are: retention cysts; congenital cysts; extravasation cysts? 5. Give the pathologic changes that take place in hyperemia of the liver. 6. What is infarction? Why are some red and some white? 7. Differentiate septicemia and pyemia. 8. Name four ways by which tubercle bacilli may enter the body. 9. Give the pathologic changes that take place in arteries infected by syphilis. 10. Give the pathology of cerebrospinal sclerosis.

PHYSIOLOGY

1. Name three uses of the blood. 2. Give functions of the skin. 3. Give functions of the cerebrum. 4. Describe the sympathetic nervous system and tell its office. 5. What are the chief factors concerned in stimulating the secretion of the gastric juice? 6. What do you understand by the term digestion? Name the organs of digestion. 7. In what part of the brain is the center for sight? 8. What is the office of the cerebellum? 9. Describe spinal nerves in general where they leave the cord and divide into anterior and posterior branches and tell how the anterior and posterior divisions differ in functions. 10. Give the name and origin of the nerve that supplies motor function to the face.

Utah Reciprocity Report

Dr. G. F. Harding, secretary of the Utah State Board of Medical Examiners, reports that three candidates were licensed through reciprocity Oct. 4, 1915. The following colleges were represented:

College	Year Grad.	Reciprocity with
College Physicians and Surgeons, Chicago	(1901)	Illinois
Northwestern University	(1908)	Wyoming
Columbia University, College of Phys. and Surgs.	(1911)	New York

Book Notices

GESCHICHTE DER AUGENHEILKUNDE. Von Dr. J. Hirschberg. Drittes Buch, Zwölfter Abschnitt — Amerikas Augenärzte im 19 Jahrhundert. Paper. Price, 6 marks. Leipzig: Wilhelm Engelmann, 1915.

The preparation of a reasonably complete and well-balanced history of ophthalmology is no light task. The basic material needed for such a work is much more scattered and more difficult of access than that required for similar investigations in other sciences, while much important information—biographies in particular—can in many instances be obtained only by painstaking and repeated inquiry and search among unpublished and private sources. Many years ago Professor Hirschberg understook the work of collecting, sifting and publishing ("Handbuch der gesamten Augenheilkunde," second edition) the data for a history of ophthalmic science in all countries since its shadowy beginnings as a special department of surgery in Ancient Egypt 4,000 years ago. As a consequence, we owe this tireless worker a debt of gratitude for his remarkable series of books on the subject; and if, as in the present volume, he has fallen short of the standard set by him in some of his earlier contributions to the subject, we who know the difficulties of his problem can excuse his partial failure to solve it.

The defects of the volume under examination are much the same as those of Hirschberg's "Englands Augenärtze" (THE JOURNAL, July 31, 1915, p. 449). In the first place, the title is quite misleading. The author is supposed to be writing a history of ophthalmology in the United States during the nineteenth century; we find, however, that a considerable amount of space is devoted to the doings of ophthalmologists (and not always of Americans) in the twentieth century. It would be an improvement to delete from the subtitle the words *im 19. Jahrhundert*. The preliminary review of general medical and surgical conditions in the United States, though ostensibly carried down to the date of publication of the book, is very defective. For example, the latest educational number of THE JOURNAL referred to (or, seemingly, consulted) is that of 1905—just ten years behind the times—and surely we have advanced somewhat during the past decade! What is said about American instruction in ophthalmology is especially unfair. Nothing at all, for example, is said of the special provisions for a thorough instruction developed in the last few years at the Universities of Colorado and Minnesota, and leading to a special degree.

In one point, at least, the volume under discussion is superior to its predecessors: the items in its various bibliographies are, in general, arranged in chronological order. This was not true of Professor Hirschberg's former volumes, in which, not infrequently, the bibliographies were compiled in the greatest confusion.

One of the greatest errors in the present work consists in the failure to observe a just proportion between the space allotted to individual ophthalmologists. For example, a long bibliography is appended to the sketch of A. R. Baker, and either none at all or but scanty and incomplete ones to those of men like Aaron Friedenwald. Extremely scanty, too, are the sketches themselves, especially of such widely known men as Boerne Bettman (one-third page); George Strawbridge (one-third page); Leartus Connor (two-thirds page); John Green (one and two-thirds pages); Henry Gradle (one-half page); Aaron Friedenwald (fourteen lines); Charles A. Oliver (one and one-third pages); William F. Norris (one and two-thirds pages); George Harlan (three-fourths page); Charles John Kipp (one-third page), and A. A. Hubbell (one-third page). In most of these instances the extreme brevity of the sketches is a matter for wonder in view of the fact that abundant information is supplied about these men by the very journals, society reports, etc., which Professor Hirschberg himself acknowledges to have been his sources. The reason for this cavalier treatment of leading American ophthalmologists is a little difficult to understand. Then, too, many of the important American ophthalmologists are not merely dismissed with a few brief words; they are wholly omitted, absolutely excluded, from this partial hall of fame. Among those who have been thus dealt with are Duff Warren Greene, M. H. Post, Edward Shakespeare, Joseph Pancoast, Charles Michel, George Chadwick and O. A. Griffin.

The author seems to have an uneasy feeling that he may have forgotten some deserving names in American ophthalmology because he complains that he has looked in vain in the "American Encyclopedia of Ophthalmology" for an account of our illustrious dead under the heading "American Oculists." The learned professor is not aware that, at least in the polite literature of this country, the word *Augenärtze* has not exactly the same significance as "oculists." In this particular, as in some others, we have not followed the German usage. In the list of American textbooks of ophthalmology, we note, incidentally, the omission of Ball's "Modern Ophthalmology," one of the best and most widely used books in this country. A matter of minor (and yet sufficient) importance is the great multitude of typographic errors which spot and mar this book on every page. Thus, for a very few examples: p. 8, "responsability"; p. 11, "in ninety per cents of our medical colleges"; p. 20, "Hubbel," for "Hubbell"; p. 65, "A. B. Prince, Jacksonville, Jllin"; p. 153, "Edwards Hartshorne"; p. 156, "cylindrical tenses"; p. 166, "Charles Archibald Robertson" for "Richardson"; p. 184, "Christopher Smith Fenner"; p. 188, "Blencowe Fryer." Professor Hirschberg tells us—and we heartily approve the sentiment—that he is proud of the record of his former pupil, William Campbell Posey of Philadelphia, but surely that does not justify writing him "Poosey." Even the index, in which, if in any place, the utmost accuracy should exist, is full of errors. The most provoking of these is the frequent setting down of a page number as just one less than the proper one. For example, Culbertson, Howard, 180 (should be 181).

Of almost every one of Professor Hirschberg's former historical volumes, one might truthfully say: "This is not a book, so much as the almost chaotically assembled material for a book"; yet, of the present volume one can hardly say so much; even the material for a history of ophthalmology in America is not present in this work. Some day, when Professor Hirschberg has finished the collection of data for a history of ophthalmology (collecting for all countries with equal assiduity) he will, we trust, proceed to the writing of that history.

DISEASES OF THE NERVOUS SYSTEM. A Textbook of Neurology and Psychiatry. By Smith Ely Jelliffe, M.D., Ph.D., Adjunct Professor of Diseases of the Mind and Nervous System, New York Post-Graduate Medical School and Hospital, and William A. White, M.D., Superintendent of the Government Hospital for the Insane, Washington, D. C. Cloth. Price, $6 net. Pp. 796, with 341 illustrations. Philadelphia: Lea & Febiger, 1915.

This is a new textbook of neurology and psychiatry, not a mere verbal alteration of the old books. There are three divisions: Part 1 treats of the physicochemical systems (vegetative or visceral neurology); Part 2, the largest portion of the book, deals with sensorimotor neurology, and Part 3 is devoted to psychic or symbolic systems (neuroses and psychoses). The authors have demonstrated that with some effort it is possible not only to write in good literary style, but also to condense, for in most cases only one of these forms of writing is practiced. One may well call this an up-to-date text-book without violating the truth, for nothing in the recent literature seems to have escaped these vigilant seekers after the new. Indeed, one may even discover that which is made today and may be overthrown tomorrow; but we can easily overlook this anxiety to be modern, when for many years our new editions of older textbooks brought nothing that was not at least five years old. One of the best chapters in the book is that on the autonomic and sympathetic nervous systems and the internal secretions. It embodies everything worth knowing of that difficult theme from the physician's and student's point of view. The illustrations elucidating this part of the textbook have been taken from the recent monographs on the subject, and are excellent guides to a proper understanding of the theoretical and practical sides of the subject. The chapters dealing with methods of neurologic and mental examinations are modern

in every detail, though rather brief. They contain material which can be well elaborated by the teacher in the class room, after the student has mastered the bare outlines. Of other portions of the book we may emphasize the excellence of the chapter on syphilis of the nervous system, which contains almost everything known on diagnosis and therapy, including the Swift-Ellis treatment of late syphilis of the nervous system.

As both authors are distinctly and avowedly freudian in their tendencies, it was to be expected that freudian doctrines would find a prominent place among the neuroses and psychoses chapters of this book. It is remarkable, however, that both authors have been able to exercise self-restraint, for psychanalysis has not usurped too much space. With the clearness usual with the authors, the entire field of psychiatry has been set forth from kraepelinian concepts, slightly tinged with freudianism. This textbook may profitably be utilized by the thinking physician and the advanced medical student. Indeed, even the neurologist will find in it much that he has seen elsewhere, but not in such compact form.

ON PHARMACO-THERAPY AND PREVENTIVE INOCULATION APPLIED TO PNEUMONIA IN THE AFRICAN NATIVE. With a Discourse on the Logical Methods Which Ought to be Employed in the Evaluation of Therapeutic Agents. By Sir Almroth E. Wright, M.D., F.R.S. Cloth. Price, $2 net. Pp. 118. New York: Paul B. Hoeber, 1915.

This book consists of a report to the Witwatersrand Native Labor Association on work undertaken under its auspices directed to the discovery of some method of mitigating the ravages of pneumonia among the native laborers in the Rand mines in South Africa. The material was published in the London *Lancet* in 1912 and 1914. The outstanding result of this investigation appears to be that the prevalence of pneumonia among the native workers in the Rand mines is to be ascribed to the bringing together in close contact in compounds of a population which has, as a racial character, a low resisting power to the pneumococcus, and that it is possible by means of prophylactic injection of pneumococci to increase greatly the resistance to pneumococcus infection and thus diminish the incidence and death rate from pneumonia among the native laborers. When the author says that in taking up experimental work on the phagocytobactericidal action of human blood with reference to pneumococci he is "breaking new ground," it shows that he is not familiar with the results of such work already recorded in medical literature. It must be regarded as unfortunate also that throughout all this work no consideration whatever is paid to the different groups of pneumococci as determined by immunologic reactions. All workers in this field will regret exceedingly that no information is vouchsafed as to the particular immunologic group to which belong the strain or strains of pneumococci used in the preparation of the vaccine employed in the prophylactic inoculation and in the other work to test the resistance of natives and others.

A TEXT-BOOK OF HISTOLOGY. By Rudolph Krause, A. O. Professor of Anatomy at the University of Berlin. Translated from an Original Manuscript and Printed Only in the English Language. Cloth. Price, $2.50. Pp. 274, with illustrations. New York: Rebman Company, 1915.

This textbook is a companion volume to the author's "Course in Normal Histology," to the illustrations in which the reader is constantly referred. Written by a man of real scientific eminence, with a creditable research record, the book has many unique features which should commend it to teachers. One notes with pleasure that the author recognizes the impossiblity of giving any structural definition to which all cells will conform, and the necessity of correlating the information gained in different fields of inquiry. It is one of the few books in which an attempt is made to establish a relation between histology and gross anatomy, on the one hand, and between histology and physiology, on the other. The absence of adequate illustrations is not wholly a disadvantage, when we reflect that histologic study is always carried on in presence of the material, and when we remember the baneful influence on the student's objectivity of the conventional caricatures which so commonly disfigure our textbooks on this subject. Such figures as are reproduced are new, or from the work of recognized authorities. Krause has made an honest attempt to present to students, as far as can be done in a book of this scope, the present status of the science, and throughout has enriched the text with facts and conclusions based on his own broad experience.

INDEX OF PROGNOSIS AND END-RESULTS OF TREATMENT. By Various Authors. Edited by A. Rendle Short, M.D., B.S., B.Sc., Hunterian Professor, Royal College of Surgeons. Cloth. Price, $7. Pp. 570. New York: William Wood & Co., 1915.

This is a companion volume to the index of treatment and index of differential diagnosis produced by the same publishers. It represents essentially a compilation from the literature with careful editorial supervision. It is perhaps a correct presentation of medical efficiency at the time of publication. Numerous statistics are cited, and the results achieved in various localities are balanced one against the other in arriving at the status of results in various conditions. The various factors concerned in prognosis are considered under separate subheadings. The work presents, of course, chiefly the English point of view, although American literature has not been overlooked in compiling it. The book is marred by few didactic statements, though some do occur. For example, "No one who has been infected with syphilis in the past should be permitted to marry until his Wassermann reaction has proven to be negative," or the following: "Of the different functional tests the most valuable is the phenolsulphonephthalein test described by Rowntree and Geraghty. The simplest for the practitioner is the iodid of potash test." The price of the book would seem to be somewhat disproportionate to its evident cost of production.

FOOD—WHAT IT IS AND DOES. By Edith Greer. Cloth. Price, $1. Pp. 251, with illustrations. Boston: Ginn & Co., 1915.

This little book is intended as a school text, especially where cookery is not a school course. School instruction with regard to the nature, preparation and uses of foods serves a useful purpose, and an interesting and instructive book might be arranged to meet this need. Unfortunately the principles (whatever they were) that guided the selection and arrangement of material have produced a confused assemblage of facts. No fixed principles seem to have guided the selection of illustrations; some (as the full-page pictures of "Old Chinese Dishes," opp. p. 224 and "A Tea Tray," opp. p. 206) are irrelevant to the subject, while one ("Grinding Buckwheat," p. 23) would surely be misleading to children if not accompanied by further explanation. Altogether, the book seems praiseworthy as an earnest attempt rather than as a notably successful achievement.

STUDENT'S TEXT-BOOK OF HYGIENE. By W. James Wilson, M.D., D.Sc., D.P.H., Bacteriologist to the Counties of Down and Antrim. Cloth. Price, $2.50. Pp. 270, with illustrations. New York: Rebman Company, 1915.

While based on lectures given to the undergraduate class in hygiene in Queen's University, Belfast, and primarily intended for medical students, Dr. Wilson's book will also prove of interest to teachers, sanitary inspectors and others interested in public health. Though making no claim to originality, the book is a clear, concise summary of the best authorities on the various subjects included in modern hygiene. It is interestingly written, well printed and copiously illustrated.

PRACTICAL ORAL HYGIENE PROPHYLAXIS AND PYORRHEA ALVEOLARIS. By Robin Adair, B.S., M.D., D.D.S., Professor of Oral Prophylaxis, Southern Dental College. Second Edition. Cloth. Price, $5. Pp. 462, with 121 illustrations. Atlanta, Ga.: Oral Hygiene Publishing Company, 1915.

Recent advances in dental science have encouraged the author to undertake the preparation of a new edition of this work. The book is practical, but is, of course, written with a special reference to the needs of the dentist rather than those of the physician. The author seems hardly prepared to accept the recent work on endamebas in pyorrhea, but places more reliance on the mechanical treatment. The book contains many new illustrations and several popular dental lectures.

Miscellany

A Community Sickness Survey

In 1912 and 1913, a study was conducted in Dutchess County, New York, by the State Charities Aid Association, to secure reliable data relative to sickness, nursing care and treatment among the general population. The period of study included all of 1912 and four months of 1913, and was made at the request of the Thomas Thompson Trust, an agency interested in the improvement of social conditions.

It was planned in this investigation to secure directly from families as full and accurate data as possible concerning sickness, including medical and nursing service obtained, the sufficiency, cost and need for domestic assistance in homes where sickness existed, etc. In Pamphlet 136 of the association, the results of this study are set forth and recommendations made for the improvement of existing conditions.

Many difficulties were encountered in carrying out the study in a satisfactory manner. During the sixteen months' period, 1,600 cases of sickness were found to have occurred, 786 of which were communicable, 673 were general medical and surgical cases, and 141 were obstetric cases. There were in addition 452 cases of chronic illness recorded, but for various reasons they are not considered in this study. Of the 1,600 patients, 1,217, or 76 per cent., secured medical care—1,058 in their homes, 101 in hospitals, fifty-eight both at home and in hospitals, and 383 patients remained at home without medical care. Of a total of 1,441 patients (90 per cent.) who remained in their homes during their entire sickness, 31, or 2 per cent., secured resident trained nursing service; fifty-three, or about 4 per cent., had visiting trained nursing service; seventy-seven, or 5 per cent., were cared for by resident untrained nurses, and twelve, or less than 1 per cent., by a visiting untrained nurse. In thirty-two homes (2 per cent.), resident domestic help was secured, and in one home visiting domestic help. In 852 instances (59 per cent.), some member of the family did whatever nursing was done.

According to the judgment of the investigators, only 55 per cent. of the 1,441 patients who remained in their homes throughout their sickness were cared for adequately; 44 per cent. received inadequate care. Only 80 per cent. of the hospital patients were cared for adequately; 20 per cent. were cared for inadequately, chiefly, it is said, because of the lack of social service and follow-up work. In many cases patients returned to homes unprepared for them, and proper convalescence was therefore impossible.

Combining home and hospital care, 57.5 per cent. of the patients were cared for adequately, and 42.5 per cent. inadequately. It was found that on account of lack of proper facilities, of 506 patients who could have paid for any necessary service, 81 per cent. were cared for adequately and 19 per cent. inadequately; 212 patients could not pay for medical or nursing service. Of these, 32 per cent. received adequate care and 68 per cent. inadequate care. It is said that in nearly 79 per cent. of the cases in which there was a lack of proper service, poverty was not a controlling cause. There were in most cases no facilities for service to be had, and in other cases there was lack of proper knowledge as to what service to seek and how to get it. Many other interesting facts were developed relative to this group of cases, which, it is believed, represent a fair average of conditions in like communities.

Dutchess County, it is said, is in rather better condition with respect to facilities for taking care of the sick than many others, and the figures emphasize the great necessity for improvement in these respects.

It is believed that the first thing necessary is to secure the cooperation of all existing agencies by organization into what the committee believes might properly take the form of a county health association. This might at first be a private organization, or might even remain so permanently, although from time to time many of its activities might be taken over by public agencies, as has happened in many instances.

In order to secure any results, it is said, the sympathetic interest and cooperation of the physicians of the county must underlie all work. To carry out the scheme proposed in the report of the committee would be a monumental undertaking at this stage of public opinion and education, and would require a large expenditure. The cost of securing the kind of service which the committee believes should be provided is not touched on in the report.

Mental Prophylaxis and Aftercare

One of the facts which emphasize the need for mental prophylaxis and aftercare of the insane is the large number of readmissions in hospitals for the insane. According to the government report "Insane and Feeble-Minded in Institutions, 1910," 23 per cent. of the 60,769 patients admitted to institutions for the insane in this country during 1910 had previously been in hospitals for the insane. As Dr. E. F. Leonard suggests in the *Institution Quarterly*, when the patient is discharged from hospital, he usually returns to the environment in which his mental disease developed and which perhaps aided in producing the disease. He has lost confidence in himself, is sensitive and feels doubly the suspicion and distrust which probably greet him as a discharged inmate of an insane hospital. Everything favors a relapse. The need for aftercare and of a friendly sympathetic oversight of such patients is evident.

As illustrating one phase of such aftercare, the same number of the *Institution Quarterly* prints an extract from the report of the Illinois Mental Hygiene Society, which has opened an industrial center in Chicago where work is to be given to convalescent mental patients. Here patients are taught handicraft; their products are placed on sale for their benefit. Some patients have been rendered partially, others wholly self-supporting. It is recorded of two patients that their whole attitude toward society changed because of the friendly interest shown in them; others have been improved in greater or less degree.

In most of the states in this country such work for the prevention of mental breakdown is either entirely neglected or left to private agencies. Several European countries, however, have a system of aftercare. In this country New York, Massachusetts, New Jersey, Rhode Island and Michigan are reported as doing some systematic work of this character. The *Institution Quarterly* also contains the plan of Dr. H. J. Smith of the Chicago State Hospital for an aftercare department to be maintained in connection with the state hospitals.

Medicolegal

Law and Evidence Applicable to Fracture Case

(*Dunman vs. Raney (Ark.), 176 S. W. R. 339*)

The Supreme Court of Arkansas affirms a judgment for $500, which plaintiff Raney obtained against defendant Dunman for alleged malpractice in the treatment of a broken leg. The court says that the injuries complained of were that the defendant, after setting the leg, so negligently and unskilfully treated and cared for it that it could not heal, but, on the contrary, became inflamed and diseased and the bones became dead so that the flesh did not adhere to them and the leg became so twisted, shortened, deformed, and diseased as to necessitate its amputation. The jury were instructed that, if the defendant failed to use reasonable care and diligence either in the diagnosis, treatment or the giving of instructions to the plaintiff or his attendants, and such failure resulted in the injuries to the plaintiff's leg, or any of them, of which he complained, without the fault of the plaintiff, it would be the duty of the jury to find for the plaintiff, and to assess his damages at such sum as, in the opinion of the jury, taking into consideration all the evidence in the case, would justly, fairly, and reasonably compensate him for such injury or injuries. Taking the instruction in connection with the allegations of the complaint, it could not have misled the jury, and it was not

abstract so far as furnishing the jury a guide by which to determine whether or not the injuries of which the plaintiff complained, or any of them, were caused through the defendant's negligence. The instruction was no broader than the allegations of the complaint, and the evidence on behalf of the plaintiff which went to the jury without objection warranted the instruction. It permitted the jury to find only for those injuries of which the plaintiff did complain that resulted from the defendant's negligence. It was the duty of the defendant, if he conceived that the instruction permitted recovery for injuries not set up in the complaint, to call the court's attention to same by a specific request. The contention that the instruction was erroneous because it did not correctly define the elements constituting the measure of damages would have been well taken if this had been the only instruction on the subject. But a second instruction told the jury that they might take into consideration the plaintiff's loss of time, if any, resulting from the defendant's negligence, the plaintiff's loss of earning power, if any, the bodily pain and suffering which he had been compelled to endure, and mental anguish, if any, which had resulted from such negligence, and any future suffering or inconvenience which he must suffer by reason of such negligence, if any. The two instructions supplemented each other, and taken together, were a complete and accurate statement of the law. A physician or surgeon is not required to exercise the highest skill possible. He is bound only to possess and to exercise that degree of skill and learning ordinarily possessed and exercised by members of his profession in good standing, practicing in the same line and in the same general neighborhood or in similar localities. He must use reasonable care in the exercise of his skill and learning, and act according to his best judgment in the treatment of his patients. Nor was there error in a refusal to strike out the plaintiff's testimony that his leg got dislocated about a certain date. That was not exclusively a matter of expert or scientific knowledge. The plaintiff was competent to testify as to whether his limb was dislocated and out of shape after it had been set. Ordinary observation would discover whether a limb that had been properly set had been dislocated, especially where such dislocation was so marked as to cause the foot to be twisted and the limb to be in an abnormal position. Moreover, the plaintiff, who was enduring the pain and experiencing the ill effects from the broken limb, was certainly competent to testify that the leg, after being set, had become dislocated.

Sufficient Evidence of Fraudulent Diagnosis and Violation of Federal Law

(United States vs. Smith (U. S.), 222 Fed. R. 165)

The United States District Court for the Eastern District of Pennsylvania, in denying the defendant's motion for a new trial after he had been convicted of using the mails to defraud, says that the charge as presented in the indictment was a scheme or artifice to defraud within the meaning and the language of the acts of Congress on the subject. The scheme or artifice laid at the door of the defendant by the indictment consisted in representing to intended dupes that he was a physician professionally equipped and specially trained in the diagnosis and treatment of certain diseases and ailments. This, of course, was for the purpose of inspiring them with confidence in him and trust in his judgment of their condition. The scheme further contemplated that the persons thus approached should be invited to submit statements of symptoms to the defendant, and that, irrespective of what the symptoms indicated, whether health or disease, the defendant would dupe the patients into the belief that they were the victims of serious ailments and in dire need of medical attention, when in point of fact they were in normal health, and thus fraudulently induce them to part with their money for the defendant's benefit. It was enough if so much of the charge was proved as constituted an offense against the law, and the offense for the commission of which the defendant stood indicted. If the case involved, as counsel for the defendant assumed, nothing more than a difference of diagnosis, or of opinion as to the proper diagnosis, the position would be well taken that a mere difference of opinion offered no evidence in itself of any insincerity in any one of the opinions. The case presented against the defendant, however, was more than a difference of opinion. He was a physician. When the defense, as well as the case for the United States, was under the consideration of the jury, there was evidence of competency and experience as a medical practitioner. Moreover, whether there was knowledge or ignorance on the part of the defendant, the real question was the same. The evidence for the United States was full, and indeed unanswerable, that the symptoms which the defendant represented to his prospective patients as alarming evidence of disease were in fact no symptoms of disease at all, but of normal health. In point of fact, the symptoms set forth were the recognized symptoms of perfect health. This afforded the basis for the judgment of the jury as to whether or not, under all the evidence, the diagnosis made by the defendant was a fraudulent one. A finding of guilt was consistent with the view that, without knowledge of whether the symptoms were those of health or disease, the defendant, with the intent of fraudulent deception, meant to frighten the supposed patient into parting with his money. The finding was likewise consistent with the view that the defendant, being a physician, with a like purpose pretended the symptoms to be those of disease, when he knew them to be indicative of health.

Alcoholic Insanity as a Defense to Crime

(Cheadle vs. State (Okla.), 149 Pac. R. 919)

The Criminal Court of Appeals of Oklahoma holds that, in a prosecution for murder, alcoholic insanity, or mental incapacity produced by voluntary intoxication existing only temporarily at the time of the homicide, is no justification or excuse therefor. Drunkenness is one thing, and the disease of the mind to which drunkenness leads is a different thing. Temporary insanity, occasioned immediately by drunkenness, does not destroy responsibility for crime, where the defendant, when sane and responsible, voluntarily makes himself drunk. To constitute insanity, caused by intoxication, a defense in a trial for murder, it must be insanity caused by chronic alcoholism, and not a mere temporary mental condition.

The distinction between a fit of drunken frenzy or madness, commonly called "delirium tremens," and temporary delusional insanity, a disease caused by excessive and long-continued indulgence in alcoholic liquors, technically called "delirium tremens" or "mania a potu," is well defined by the authorities and text-writers. The principle is everywhere recognized that voluntary intoxication is no justification or excuse for crime, and is no excuse for homicide, though carried to the extent of producing incapacity to control the mind and will. However, while intoxication does not excuse homicide, it may produce a state of mind in which one is incapable of forming a design to take life; but evidence of intoxication is admissible only as bearing on the existence or nonexistence of malice.

Insanity, though superinduced by excessive and long-continued indulgence in alcoholic liquors, and known as "delirium tremens" or "mania a potu," renders a person so afflicted irresponsible for his acts, if it be of such a character as to deprive him of the mental capacity to distinguish between right and wrong, as applied to the particular act, whether he be under the influence of liquor at the time of the commission of the act or not; but, to do so, his affliction must be settled or fixed insanity, not a mere fit of drunkenness. A person, not previously laboring under such a disease or affliction, who voluntarily becomes intoxicated to such an extent or for such a period of time as to cause unconsciousness, of his acts, is not irresponsible under the law for the acts done by him while in such mental condition.

A person who commits a homicide while so drunk as to be incapable of forming a premeditated design to kill, if he had formed no purpose to commit the crime prior to the time he became so intoxicated, is not guilty of murder, but is guilty of manslaughter in the first degree.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.
Southern Surgical and Gynecological Association, Cincinnati, Dec. 14-16.
Western Surgical Association, Des Moines, Iowa, Dec. 17-18.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION

Forty-First Annual Meeting, held at Lexington, Ky., Oct. 19-21, 1915

The President, DR. HUGH CABOT, Boston, in the Chair

Arteriosclerosis of Uterine Vessels

DR. JOHN W. PRICE, Louisville, Ky.: A microscopic study of specimens I removed suggested that the hemorrhages were the result of rupture or sclerosed arterioles in the submucosa. Some areas beneath the submucosa contain recent hemorrhages undergoing fibrosis; other areas appear to be old hemorrhages which have undergone fibrosis, and in other places outside the vessels is evidence of repair. The patient had a single profuse hemorrhage three years before operation, and had no unusual bleeding during the following two years. The history of the case, the character of the hemorrhages, and the appearance of the patient are the greatest aid in making the diagnosis in the absence of a palpable tumor. In cases in which there is any doubt as to whether there is present a cancer of the body of the uterus, I suggest the use of the curet or hysterectomy. In cases in which the bleeding has been serious, no time should be lost in curetting —the uterus should be removed as quickly as possible, and if found to be malignant, a more radical operation can be performed at once. All my cases except the last one had been treated previously by so-called conservative methods. A continuance of a palliative treatment for too long a time subjects the patient to unnecessary danger, and if the patient is suffering with a malignant condition, much valuable time is lost.

DISCUSSION

DR. CHANNING W. BARRETT, Chicago: The uterus is an organ unlike other organs in that it has a physiologic hemorrhage, and any departure from that regular bleeding may be just a little change from the normal and the cause may be very slight. In weighing the different causes of hemorrhage, we must recognize that there is a material resistance to treatment owing to a change in the blood vessels themselves. Often coming on at about the menopause, we must remember that the uterus is a senile organ at that time. Instead of deciding that the uterus should come out if it is malignant, and ought to remain if it is not malignant, we should bear in mind that many of these uteri have to be removed at that time.

DR. THOMAS J. WATKINS, Chicago: As a remedy for temporary use in these cases, I would suggest an old but very efficient one, which consists in packing the uterus with gauze saturated with iron, Monsell's solution or the tincture. It is the only packing that can be left for a long time without becoming offensive. It can be left for a week without disturbing conditions or developing odors.

Kidney Lesions Diagnosed with the Aid of the Cystoscope and Roentgen Ray

DR. COURTNEY W. SHROPSHIRE and DR. CHARLES WATTERSON, Birmingham, Ala.: The cystoscopic examination and functional test, together with careful urinalysis, is by far the most important. Next comes the roentgenographic examination and then the physical findings and the patient's history. We place little faith on shadows said to be within the kidney or ureter unless they are shown positively to be within one of these structures by means of the shadow catheter, pelvic injection or the stereoscopic plate. Pelvic injection is one of the most valuable means for diagnosing lesions of the kidney. It is the duty of the cystoscopist to insist on those procedures which are safe and painless when properly performed before having numerous roentgenograms made which are worthless even though the suspicious shadows are shown.

DISCUSSION

DR. BRANSFORD LEWIS, St. Louis: The general practitioner should familiarize himself with the cystoscope and the urethroscope, because the proper application of these instruments will enable him to make a correct diagnosis. I have known a number of patients who have gone on for many years suffering because they were told by general practitioners that their trouble was practically incurable, yet their condition could have been relieved promptly by simple operative measures.

DR. F. M. BUCKMASTER, Effingham, Ill.: I recall the case of a woman who was operated on three times before the cause of her trouble was ascertained. She was about 30 years of age, and complained of recurrent attacks of pain, slightly continuous between times, along the lower end of the ureter in the appendiceal region. She also complained of attacks of cystitis. There was more or less urinary disturbance all the time, especially severe at times. The abdomen was opened and the appendix removed without relieving her symptoms. A year later, the symptoms continuing, the same surgeon opened the abdomen again, and removed a tube and ovary on that side. The cystitis and attacks continued. Three years after the first operation the symptoms not only continued but became worse, and at that time pus cells and blood cells were found in the urine, and the cystitis was quite severe a large part of the time. On investigation a stone was found in the lower end of the left ureter. This stone was removed and the woman recovered.

DR. LEON SOLOMON, Louisville: The Roentgen ray may or may not disclose the nature of the trouble, and I feel that sometimes it has been the cause of surgery that is difficult and might have been avoided. I have in mind a piece of surgery which was proposed by a careful diagnostician, himself an internist, in which the positive finding of the operation was that of a stone in the ureter. It was demonstrated in advance of the operation by the catheter in situ that the shadows were phleboliths.

Limitations of High Frequency Treatment of Papilloma of the Bladder

DR. H. G. HAMER, Indianapolis: Applications of the high frequency current in cases of carcinoma showed some hemostatic effect and slight reduction in the size of tumor or, on the other hand, marked reduction in size to be followed by rapid growth uncontrolled by burning. In one case it seemed to cause more rapid extention. High frequency cauterization is an important addition to our means of attacking vesical papillomas of the noninfiltrating type. All benign papillomas should be treated primarily with the high frequency current in view of the high percentage of recurrences following open operation (50 per cent.) and the high mortality (10 per cent.). In cases in which suprapubic operations have been done recurrences should be looked for and, if present, treated by fulguration on their first appearance. In dealing with papilloma involving the vesical orifice and prostatic urethra, perineal cystotomy with removal of as much of the tumor as possible, and application of the high frequency current to the remaining growth, seems a rational procedure.

DISCUSSION

DR. JOHN R. CAULK, St. Louis: The general practitioner should consider any bleeding from the urinary tract as serious, particularly a symptomless hematuria, and not stamp these hemorrhages as due to a congested bladder neck, and various other things that are so commonly ascribed as causative factors in these cases. The general surgeon has yet to be convinced of the importance of the cystoscope in almost all cases of prostatic hypertrophy before operation. Patients should be subjected to cystoscopy because of the fact that tumors quite frequently are back of prostatic obstructions, and many of the untoward results following perineal prostatectomy seem to be due to leaving behind a tumor which is back of the obstruction. I have seen four such cases.

Caudal Anesthesia for Prostatectomy and Other Genito-Urinary Surgery

DR. BRANSFORD LEWIS, St. Louis: This method of anesthesia was used in seventy-seven cases with gratifying results. The method is far preferable to the other methods.

DISCUSSION

DR. CHARLES E. BARNETT, Fort Wayne, Ind.: I think the mortality of prostatectomy is due more to general anesthesia than any other one thing, on account of the deficiency of the kidneys in these cases, and the sooner we can get away from general anesthesia, the less the mortality will be following prostatectomy, no matter what route we adopt in removing the prostate.

DR. JOHN W. DEAL, Springfield, Ill.: In speaking of the high mortality, I should like to ask whether reference is made to gas followed by ether or gas with the occasional administration of ether.

DR. RICHARD A. BARR, Nashville, Tenn.: Three years ago, Dr. Brown of Nashville noticed an account of this method of anesthesia in a German medical journal, and he immediately adopted its use. It has been quite generally used in our city since then by a number of surgeons doing rectal work. I have done a little rectal work and a few perineorrhaphies by the method, and have found it entirely satisfactory.

DR. FILIPP KREISSL, Chicago: The methods of local anesthesia for operations on the pelvis, bladder and prostate are intraspinal, epidural or sacral, and parasacral. The dangers of injecting the epidural canal with novocain or cocain, or the dangers of nerve blocking with novocain, are grossly exaggerated. If one will keep well within established and safe limits of this drug, not using more than a definite quantity of a certain concentration, there is absolutely no danger.

DR. STANLEY G. ZINKE, Richmond, Ky.: As to caudal anesthesia, the sacral canal is a cavity or sac, and we require from 30 to 90 c.c. of the agent we use before we get the anesthetic effect. Why? Because the capacity of these little sacs differ. The anesthesia is due entirely to pressure and not at all to the novocain present, 0.5 per cent. It makes no difference what quantity is injected, it is the pressure that does the work.

When Is a Prostatic Fit for Operative Procedure?

DR. CHARLES E. BARNETT, Fort Wayne, Ind.: After the maximum benefit from thorough preoperative treatment finds the patient below par in fitness for operative procedure, the question of the anesthetic given should be the most considered. The less the fitness, the less the general anesthetic. Local anesthesia when possible, and to the greatest degree when not possible is the one to be chosen.

DISCUSSION

DR. BEN MORGAN, Chicago: Local anesthesia in surgical operations on the prostate should come first in conjunction with a general but mild anesthetic, and what general anesthetic should be preferred? Chloroform? No. Ether? Doubtful. Nitrous oxid? Yes.

DR. W. D. HAINES, Cincinnati: The surgeon's duty, especially in this type of cases, is to save life, not time. The preoperative management of cases of prostatic disease is infinitely more important than what the surgeon is going to do at the operating table. It is not hard to take out the prostate; almost any general surgeon can do it; but the experienced man who has handled many cases will have a high mortality if he does not heed well the warning given us.

DR. J. B. TAULBEE, Lexington, Ky.: I am favorably impressed with nitrous oxid as an anesthetic. My experience with ether in doing prostatectomy has convinced me that in these cases in old men, in whom the system is run down, it is better to forego the operation than to risk a general anesthetic as ordinarily given, whether it is ether or chloroform. The safest method is to do a two-stage operation under local anesthesia.

Autogenous Vaccines in the Treatment of Bronchitis and Asthma

DR. ROBERT H. BABCOCK, Chicago: Autogenous vaccines prepared from the sputa have yielded such results in three cases of acute bronchitis, one of chronic bronchitis, and four of chronic bronchitis associated with attacks of spasmodic asthma as to warrant recommending this mode of therapy as against the old time use of expectorants by mouth. In bronchitis independent of asthma, the organisms have been mainly *Bacillus mucosus*, the *Diplococcus mucosus*, the *Micrococcus catarrhalis* and an influenzalike bacillus, while in cases of bronchial asthma an anaerobic fusiform bacillus has been added. Asthma has yielded to this vaccine treatment only when this anaerobic fusiform bacillus has been largely present in the vaccine. Great care should be exercised in the use of vaccines that the dosage be not so large or so often given as to cause reaction, since this reaction, whether general or local, indicates a negative phase and aggravates the patient's condition. The main drawback to the use of autogenous vaccines is the necessity of perhaps several cultures, and the preparation of new vaccines should the cultures show that some of the germs found originally have disappeared or become subordinate in number to others. New vaccines should be prepared whenever the condition of the patient seems to have come to a standstill.

DISCUSSION

DR. LEON SOLOMON, Louisville, Ky.: My experience with vaccines includes not only autogenous vaccines, but also the so-called stock vaccines. Their employment in properly selected cases is fraught with as many and as positive results as those obtained from the use of autogenous vaccines. The fusiform bacilli have been absent in every case under my observation, as well as that of a competent bacteriologist in a thoroughly equipped laboratory.

DR. R. H. BABCOCK, Chicago: One reason the fusiform bacilli are not more frequently obtained in culture is that this bacillus grows very slowly. My laboratory reports show that frequently after all other bacilli have put in an appearance the anaerobic bacilli will fail to become manifest until after the third and sometimes the fourth day. In cases of bronchial asthma, when an alveolar abscess is present in any given case, the cultures in that case will show two organisms, the *Streptococcus mucosus* and the anaerobic fusiform bacillus. I am not prepared to say that this is the organism which is responsible for the asthma; nevertheless it has been a striking experience in every one of my cases of alveolar abscess that, with one exception, a fusiform bacillus has been cultivated when the procedure has been allowed to extend over a sufficient length of time.

Typhus Fever

DR. RICHARD P. STRONG, Boston: The epidemic of this disease which recently raged in Serbia was the most severe one which has occurred in modern times. A few cases of typhus had occurred in Serbia in October, 1914, but the disease did not make its appearance in epidemic form until January, 1915, and then in the northwestern part of the country, among the Austrian prisoners, who were greatly crowded and who necessarily were compelled to live under very insanitary conditions. The disease quickly spread from them to other individuals, and as the infected patients and the districts in which they were situated were not quarantined, and the Austrian prisoners and infected individuals were sent or allowed to go to various parts of the country, Serbia was soon afflicted with a terrible and widespread epidemic. The country, weakened by war, was not prepared for an epidemic, and for a time one might say that the typhus raged almost at will. The majority of the small number of Serbian doctors sooner or later became afflicted with the disease. Those who remained well were occupied with treating the sick and also the wounded from the battlefields, and methods for prevention were impracticable or were not undertaken. Wounded soldiers, or those afflicted with minor ailments or diseases with relapsing fever, wandered into the hospitals at will and entered the wards filled with cases of

typhus, sometimes occupying the same bed, for it was not unusual for two or even three patients to be found lying in the same bed, and the available floor space was also filled with patients with no beds. The epidemic increased through January, rose more rapidly in February and March, and reached its height in April, when the number of cases was in the neighborhood of 9,000 a day. Through the combined efforts of all the outside volunteer workers, and with the cooperation of the Serbian physicians and officials, the epidemic rapidly declined, and for the last three weeks before my departure from Serbia we could not find a fresh case of typhus. The sanitary condition of the army and the people was then excellent. I trust that the sanitary demonstrations in the prevention of typhus, which have been given the Serbian people, and the construction of the various disinfecting plants throughout the country will prevent the occurrence of another epidemic of typhus, such as we have just witnessed, and which destroyed in the neighborhood of 150,000 people. All of the Serbian hospitals had been thoroughly disinfected before I left that country, and are ready for the reception of the wounded.

Gastric and Duodenal Ulcer from the Standpoint of the Internist

DR. W. F. BOGGESS, Louisville, Ky.: I would urge that the internist be more careful and painstaking in his examination of the various digestive disturbances that come to him, to fit himself to recognize these conditions in their earlier stages, and to urge on him the fact that there is a medical side to the question, and that if the majority of these patients go to the surgeon it is a reflection on the internist's diagnostic as well as therapeutic acumen. When do these cases cease to be medical and become surgical? No time limit can be stated. Each case is an individual one. When all medical means have been intelligently tried, and one is threatened with a condition of chronic invalidism, then call a surgeon with the assurance that he can and will restore the patient to a fair, if not perfect, condition of health and happiness.

(To be continued)

MEDICAL ASSOCIATION OF THE SOUTHWEST

Tenth Annual Meeting, held at Oklahoma City, Oct. 12-13, 1915

(Concluded from page 1845)

Management of Pellagra

DR. W. T. WILSON, Navasota, Texas: A valuable test of pellagra in case of doubt is to expose the bare arms to the sun for an hour for two or three days, and if the person is a pellagrin the characteristic eruption usually appears. In acute pellagra, or in pellagra of recent origin, picric acid is of value internally and as a gargle. In severe cases or those with malarial symptoms, quinin hypodermically should be used first, the picric acid following. In the chronic forms, picric acid and sodium cacodylate may be alternated or given at the same time, and also some sodium bicarbonate at intervals.

An Outline of the Progress of Prostatic Surgery

DR. CLARENCE CAPELL, Kansas City, Mo.: There has been progress in prostatic surgery. The mortality has been reduced from about 15 to about 7 per cent. This progress has been along several lines. In the first place we have a better knowledge of the anatomy and mechanics of the condition. We know now that in only about 90 per cent. of the cases is there present a true hypertrophy of the prostate. There may be a fibrous bar across the floor of the bladder near its outlet, or there may be a fibrous infiltration entirely surrounding the internal meatus. The word "prostatism" is the better word to designate the condition. Another advancement is the more thorough preliminary examination and investigation of the cases. I should like to emphasize the value of the cystoscope and functional kidney tests. When the kidney function is low the mortality is high, and when the kidney function is high the mortality is low. Another advancement is in the improvement in the operative technic. The suprapubic is fast becoming the more popular route, as it enables the operation to be done more easily. There is less likelihood of doing injury to the rectum and other structures. There is less likelihood of its resulting in lack of urinary control or of there being a permanent urinary fistula. It is true that the mortality is a little higher, but the results are so much better that if there are no special indications for the perineal operation, the suprapubic should be the route of choice.

DISCUSSION

DR. A. B. SMALL, Dallas, Texas: My experience in doing prostatectomy is that the suprapubic route is much preferable to the perineal, and if I were doing this work now I should do it under caudal anesthesia.

DR. JOHN A. WALKER, Shawnee, Okla.: It is essential to get patients on whom we are to do a prostatectomy in the best possible condition before the operation. In the old men with enlarged prostates in whom the catheter has been used from three to ten years, the walls of the bladder are enormously enlarged, thickened, congested and stretched out of shape and out of the normal relations that they ought to have. The operation should be done in two stages, first opening the bladder suprapubically, and inserting a large drainage tube, and then later enucleating the gland.

DR. J. M. COOPER, Enid, Okla.: It has been my observation that when a patient has been accustomed to the use of the catheter for a number of years, the suprapubic route is preferable. The urethra is more or less infected, there is a large amount of congestion, and in some cases the walls of the urethra will be hardened, and in such cases you will not get the urethra to heal readily after the operation.

DR. F. H. CLARK, El Reno, Okla.: I have always resorted to the perineal route in removing the prostate, and have not had any difficulty in doing so. I think we obviate the two stage operation by so doing.

DR. J. E. GILCREEST, Gainesville, Texas: We should get these patients in readiness for operation and try to get the bladder thoroughly drained suprapubically before removing the prostate. I did a suprapubic prostatectomy in one case, but in the last twelve years I have done nothing but the perineal operation.

DR. T. M. SANGER, Oklahoma City: In nine tenths of these bladder cases, the operation should be performed at one sitting. I have learned from experience that if free drainage of the bladder is kept up, there will be very little trouble from infection. In one case, before operation the patient was passing stones because there was so much sediment in the urine, but as long as I kept the drainage tract open there were no further infection, no fever, and no trouble.

Catarrhal Deafness, with Special Reference to a New Method of Treatment

DR. W. E. DIXON, Oklahoma City: After recovery from all throat and nose operations, and especially secretions in the nasopharynx, I pass an applicator wound with cotton which has been dipped in a 5 per cent. solution of cocain and epinephrin in one tube, and immediately follow this by another dipped in a 1 or 2 per cent. solution of silver nitrate. The next day the other tube is treated in a like manner. This mode of treatment is continued until the hearing is improved or until the tubes are patent. I have treated each tube every day, but better results are obtained, perhaps, by not treating so often. It may be better, after the first week or two of treatment, to treat each tube only twice a week, then once a week. Finally the patient will tell you that the air passes freely, at which time it is best to lengthen the interim between treatments.

Treatment of Nevus

DR. J. L. MCDERMOTT, Kansas City, Mo.: Treatment should be instituted as soon after birth as the strength and health of the baby will permit, especially in those nevi which manifest a tendency to grow. If properly treated, the growth will be checked at once and its complete removal will be facilitated. As to the method of treatment, that will depend on the age of the patient, the location of growth, the size and character of the growth, and the ability of the doctor to keep his

patient under observation and control for the necessary time to complete the treatment. In recent years the use of Roentgen and radium therapy has grown in popularity in the treatment of nevus. Both agents have a specific and selective action on the endothelial cells of the vessel walls, and produce an endarteritis followed by a fibrosis. Successive treatment causes the fibrous tissue to undergo contraction, and the vessels are largely obliterated. How perfect the results of the treatment are will depend on the operator's ability to destroy the subcutaneous vessels, and at the same time preserve the surface epithelium. In papillary angiomas and small localized nevi, excellent results may be secured with carbon dioxid snow. Even in cavernous angiomas in which spontaneous hemorrhages have occurred, the snow may be used without danger of hemorrhage following the treatment. In the application of snow, caution should be used in the depth of the freezing produced, for, as in any other form of treatment, an ugly scar may result if due care is not used.

DISCUSSION

DR. E. H. SKINNER, Kansas City, Mo.: I have not had success with radium in treating port wine marks, but I think all of the work that has been done with radium in lymphangiomas can be duplicated by the Roentgen ray. There is a tendency at the present time on the part of people to take advantage of radium, which not all of us can afford to keep in our offices, and as long as the same results can be obtained by means of the Roentgen ray, except in cases of port wine marks, it is unnecessary to advise patients that radium is the only treatment.

Nervous Disorders Associated with Pelvic Disorders

DR. G. H. MOODY, San Antonio, Texas: Any pelvic disease should be corrected, if possible, just as should any disease of any other organ of the body without reference to the question as to whether or not a nervous or mental disorder exists in order to stop its drain on the general health, provided in a neurotic individual, when a surgical operation or other heroic treatment is indicated, the nervous depression or instability is not so great as to precipitate an acute outbreak as often happens. Several cases have come under my observation in which nervous and run-down women have become abruptly insane immediately following an operation, well performed, and in good surgical hands. A few patients also have been operated on under my observation during an attack of insanity, neurasthenia or hysteria with the results of an intensification of the nervous symptoms, induced by the extra strain and shock made by the operation and anesthetic on an already depressed nervous system. I have also seen more or less important operations, made on a diseased pelvic organ in an excited, delirious or maniacal patient, result in marked improvement, when the operation was followed by the patient being put to bed and absolute rest enforced. The same immediate improvement has also been observed in others, men as well as women, not requiring an operation, when absolute rest and proper care and attention were likewise enforced.

DISCUSSION

DR. G. W. ROBINSON, Kansas City, Mo.: If the pelvic organs are diseased in nervous women, they should be treated just the same as they would be in those who are not nervous. The same changes take place in the nerve cells, as the result of constant pain, which occur in cases the result of shock. We also get a state of intoxication because in these conditions the body is not able to take care of toxins that normally develop in the system, and naturally we would expect neurologic conditions to develop as the result of pain extending over a long time. Especially do we have infections in the pelvis from which we get an absorption of toxic material.

DR. S. GROVER BURNETT, Kansas City, Mo.: I know of no question more difficult to answer than when we shall remove pathologic conditions in the pelvis in a patient who has gone to pieces mentally. When there is unmistakable disease in the pelvis that is doing damage to the patient, it should be removed; but there has been too much removal in women for so-called neurotic ovaries. Surgery is contraindicated in such cases.

Nitrous Oxid-Oxygen Analgesia in Obstetrics

DR. F. K. CAMP, Oklahoma City: The time of labor is materially shortened. Perineal lacerations are less frequent. In forty-four primiparas to whom gas was given, twenty showed some degree of laceration, or 45 per cent., while with sixteen primiparas without gas, there was some degree of laceration in twelve cases, or 75 per cent. In my series of twenty-five cases, all of the babies cried just as early and just as vigorously as those who did not receive the gas, and showed no signs of anesthesia. The convalescence in these patients was in every way smoother and quicker than I have ever seen in a corresponding series of cases. More patients left the hospital under ten days after delivery, than over twelve. Multiparas were generally out of bed on the fifth day, primiparas up in a chair on the sixth or seventh day.

DISCUSSION

DR. S. J. WOLFERMANN, Fort Smith, Ark.: I should like to report a fatal case in a member of my own family. The patient, aged 32, was given nitrous oxid gas in New York by one of the best anesthetists there for the purpose of undergoing an operation for a peritonsillar abscess, and died in a minute and a half from respiratory failure.

Diagnosis and Medical Treatment of Gastroduodenitis

DR. F. B. ERWIN, Wellston, Okla.: The nervous phenomena in these cases are so very prominent that many have at first been diagnosed hysteria, neurasthenia and other nervous diseases. They have even been diagnosed as gallstones. The patient complains of general weakness, occipital headache, hot flashes, numbness of limbs, nausea with occasional vomiting, disturbance of vision, pain in region of stomach and duodenum, in from one to two hours after eating, belching considerable quantities of gas, palpitation of the heart and many other similar symptoms. On physical examination the patient frequently presents a pale, rather sallow, listless expression; the heart action in the incipient stage is usually in fairly good condition, with the exception of being easily irritated; some tenderness in the region of the stomach and duodenum; kidney action increased at the time of attacks of pain; increased acidity of the urine; bowels in the first few months usually constipated; blood pressure slightly lowered, and the superficial reflexes increased considerably and the deep reflexes slightly. The treatment of these cases is largely dietetic, with a small amount of medicine the first few weeks. The medicinal treatment should be so adjusted as to check and change the too acid condition of the stomach and return it to a normal condition. A mild alkaline preparation should be given every two or three hours for a few days. At the same time strychnin should be given three or four times daily. A gentle laxative should be used from every two to four nights. No severe purgative should be prescribed at any time, for the reason that it irritates and aggravates this condition. Strychnin has an excellent tonic action on the muscular striae of the intestinal wall when given three or four times a day. It also has a good tonic effect on the heart. The length of time for medicinal treatment will depend on the stage of the disease and the reactive power of the patient. The diet should consist largely of carbohydrates and fats so as to place as little work as possible on the stomach and duodenum. It should be taken every three or four hours for a time in small quantities. Such food as cream, butter fat, toasted light bread and like foods are easily digested. No fried foods or acid should be allowed at all.

Tracheobronchoscopy and Esophagoscopy

DR. D. L. SHUMATE, Kansas City, Mo.: I have done all my work through the mouth, not finding it necessary to do a tracheotomy. Under general anesthetic, I use a dorsal position, with the patient's head held off the table by an assistant. I have found that the quicker you operate, the better the condition of the patient and the easier to remove the foreign body. I have two cases of safety pin in the esophagus, one in a grown woman, the other in a 7-months-old baby. A case of a 25-cent piece in the middle third of the esophagus, I failed to find the first time I tried, but got it on second trial.

One half-dollar that I saw disappear into the stomach under anesthesia in a 6-year-old boy was passed in the stool five days afterward. I saw one peach seed do the same trick, except that it passed from the esophagus before the patient had entirely lost consciousness from the anesthetic, but was unable to tell us until afterward. Of course I failed to find the seed, for it was no longer in the esophagus. I have had cases of big buttons, little buttons, a buttonhook, a plum seed, pieces of tin and many foreign bodies in the esophagus. I have had thirty-odd cases all together, and I feel that I have only begun to acquire the skill and knowledge of doing good work. I have had only two deaths.

NEW YORK ACADEMY OF MEDICINE

Meeting held Oct. 21, 1915

The President, DR. WALTER B. JAMES, in the Chair

SYMPOSIUM ON TYPHUS FEVER

The Form of Typhus Fever that Is Endemic in New York and Has Been Called Brill's Disease

DR. NATHAN E. BRILL: Typhus fever is always the result of conditions which are associated with personal filth, with the segregation of people in confined quarters, and with economic conditions which produce squalor and famine; finally, it stands as an index of man's greed, of his lust of conquest, of his sociologic inefficiency. In short, the disease appears whenever conditions are favorable to the development of vermin, particularly the body louse, with which the disease is now specially associated as an etiologic factor. The body louse explains most of the epidemiologic factors of the disease, particularly its appearance and its spread. Typhus fever has appeared in all countries, particularly in those in which the social conditions are associated with poverty. Even America had not been spared in the past, as is evidenced by its occurrence in 1836, 1847, 1865, 1881 and 1893. With the last two epidemics I have had personal experience in New York. In order to form a proper conception of the disease, it will be necessary to divest the mind of all preconceived notions gained from textbooks and monographs. Typhus fever exists in two forms, a mild, attenuated or endemic form, so disguised as to have escaped observation and to have been mistaken by almost everybody for typhoid fever, and the epidemic form which usually begins rather suddenly with a chill or chilly sensations, though it may occasionally be preceded by two or three days of malaise and general body pains. Headache rapidly supervenes and fever immediately appears. These symptoms ars quickly augmented, so that by the second or third day the fever may have reached its fastigium of 104 or 105 F. As the disease progresses it is marked by profound toxemia, signs of intense blood infection, marked involvement of the nervous system manifested by delirium, excitement and tremor, and somnolence, stupor, coma vigil, and an unusually severe involvement of the muscular system as well, with the tremor and physical exhaustion which were so often manifested. Epidemic typhus fever is a disease of the winter months and is highly communicable. Wherein does the endemic or mild form of typhus fever differ from the epidemic typhus fever? The two are alike in their onset, in the first stage of the eruption, in the critical decline and both are terminated, not followed, by relapses. In all other respects they differ. The eruption in the mild form rarely goes to the hemorrhagic stage; it is always an erythema. There is no profound involvement of the nervous system; there may be a slight delirium, but it is mild in type, appearing only at night. The patient is never, or rarely, stuporous, never seized by maniacal excitement, never goes into coma vigil, and has no muscular tremors, subsultus, or carphology. Involuntary discharge of urine and feces has never been seen by me in the mild form of typhus fever. In the mild form the headache, instead of diminishing about the eighth day as in the epidemic form of the disease, becomes progressively more intense even up to the end of the illness. The mortality of the mild form is less than 0.25 per cent. I have seen only one death in over 400 cases which up to this time have been entered on our records at Mount Sinai Hospital. This is a marked contrast to the mortality of 20 per cent. in the hospital cases of epidemic typhus fever seen by Murchison and Curschmann. The period of the greatest prevalence of the mild form is in the summer months, which is directly opposed to the time of prevalence of the epidemic form. In the mild form a little less than 70 per cent. of all the cases appear in the months of July, August, September and October. There is a decided difference in the communicability of the two forms, the endemic form showing no evidence of being at all communicable. It seems to me that the body louse is not an important factor in the communicability of the mild form of this disease, and that some other agent must be looked for to explain the origin and spread of this form. It was the epoch-making work of Dr. Harry Plotz, who isolated the organism of the mild form and of the epidemic form of this disease, which he found to be identical in all respects, which proved that the disease which I described was typhus fever. I am thoroughly convinced that the work of Dr. Plotz and Dr. Peter K. Olitsky has established the etiologic factor of typhus fever in its two forms, and that this dread disease is no longer one of unknown origin but is due to the invasion of the body by the *Bacillus typhi exanthematici*.

Typhus Fever in Mexico, in England and in This Country

DR. JOHN F. ANDERSON, Washington, D. C.: Typhus fever in England, in Mexico and in the United States, so far as my observations go, shows no essential differences, except as regards severity and mortality. The disease as it came under my observation in England had a mortality of about 20 per cent.; the mortality in America is not over 2 per cent. The mortality in Mexico shows considerable variation in different years and among the native and foreign population. In 1909 and 1910, the mortality among the patients in the Mexican General Hospital was 10 per cent., while in 1911 and 1912 it was nearer 5 per cent. The disease is much more severe among the foreign population than among the natives. Of 144 cases of typhus fever treated in the American Hospital in Mexico City from 1888 to 1910, fifty died, a mortality of 34 per cent. Many mild cases escape observation, while the severer cases are seen by a physician, and in this way the mortality rate is increased over the true figure. In the western hemisphere typhus fever occurs in a mild type in practically all the larger cities as far west as Milwaukee and as far south as Atlanta. It also occurs in certain portions of Mexico and Central America. In Mexico it has been observed that it never prevails below an elevation of five or six thousand feet. Even when persons come from a high altitude during the incubation period of the disease and develop the disease after reaching the coast, it does not spread. The inability of typhus fever to spread in the lower altitudes of tropical and subtropical countries and its lessened prevalence in summer and fall is attributed to the effect of the higher temperature on the transmitting insect, the body louse or *Pediculus vestimenti*. Since we know that typhus fever is transmitted by the body louse and know the effect of high temperature on the life of the insect, we can explain the influence of the high temperature on the prevalence of the disease. Typhus fever is still endemic, and the United States should require American sanitarians to recognize the persistence of the problem and to guard against a disease that may at any time assume epidemic prevalence and virulence. All efforts at prevention must be centered on the louse. These should include measures for the destruction of all lice and their eggs, the adoption by persons in the vicinity of cases of typhus of measures to prevent the possibility of their being bitten by lice, and inoculation with the mild type of the disease of persons entering localities where the disease is present.

Pathogenesis of Typhus Fever

DR. PETER K. OLITSKY: The organism of typhus fever is a small gram-positive bacillus which grows only under anaerobic conditions. It is found in 100 per cent. of the

epidemic typhus cases in which cultures were made before the crisis and in 53 per cent. of the endemic cases. The earlier in the disease the blood culture is taken the more often it is positive. The more severe the case, the more numerous are the organisms. Antibodies against the organisms are found in the blood of typhus fever patients or in animals in which the disease has been produced experimentally. Complement-fixing bodies, agglutinins, precipitins and opsonins have also been found. These antibodies are usually absent when the fever is present, and are present to a small extent at or shortly after the crisis. The greatest concentration is found from five to twelve days after the crisis. The crisis is not due to sudden destruction of the bacteria, but rather to the result of the activities of the cells. Complement-fixation tests are positive in 71 per cent. of the cases after the crisis. They are negative when tests are made with the serum of patients suffering from other diseases or with the serum of typhus fever cases tested against other organisms. Agglutinins were present in 92 per cent. of the cases after the crisis. In numerous control cases no agglutinins were found. Precipitins were found in 73 per cent. of the cases after the crisis. In monkeys with experimental typhus fever, antibodies were found the same as in man. In guinea-pigs only opsonins were found. In cases of endemic typhus the most marked antibody reactions were found in cases with negative blood cultures. Antibodies could be produced in a few monkeys by inoculation of the organism, but they were not immune to the virus of typhus fever. It was found that blood from typhus fever patients which contained no bacilli or very few was not infective for animals, while typhus blood in which the bacilli were more numerous was infective for animals. Finally, we have succeeded in finding a febrile reaction like that in typhus fever by injecting a guinea-pig with an emulsion of live typhus bacilli from a case of endemic typhus fever. In one guinea-pig the organism was recovered from the blood at the height of the febrile reaction.

Discussion on Typhus Fever

DR. G. A. FRIEDMAN: Three epidemics of typhus fever came under my observation while I was in active practice in western Russia. The disease was constantly endemic and ran a mild course. If an epidemic occurs in a locality in which typhus fever has not recently been present, the cause is an exogenous one. In such a community the epidemic spreads more rapidly than in a community in which outbreaks occur at frequent intervals. These cases run a more severe course, and the mortality is higher. An epidemic breaks out with few exceptions in the fall, reaches its height in February or March, and dies out with the first warm days. Somehow there is a tendency for the contagion to remain in endemic form in many regions of the world in an attenuated state. From these endemic cases an epidemic may be expected at any time. It is impossible to state why the endemic cases do not more frequently lead to epidemics in the overcrowded dwellings of our large cities. In endemic regions one sees cases of typhus fever at all seasons of the year, though in the fall and winter the moderately severe cases are more numerous, while in the spring and summer the mild cases predominate. As a rule, the course of the disease is mild among children even in epidemics.

DR. E. LIBMAN: Dr. Brill did not mention two cases of endemic typhus fever in which he made necropsies and found the bone marrow of the femur red. This feature was first noticed by Dr. Welch, who has expressed the view that possibly the organisms multiply in the bone marrow. The suspicions that have been expressed that the organism of Dr. Plotz may be a secondary invader can easily be dismissed. We know of no disease that has a constant secondary invader. The organism described by Drs. Plotz, Baehr and Olitsky was found regularly in the blood of epidemic typhus fever cases and in half the cases of endemic typhus fever. The organisms from the epidemic cases were found to be virulent; those from the endemic cases were not. I should like to call attention to the part of the work done by Dr. Olitsky in which he finds in the endemic cases of typhus fever the most marked complement-fixation and agglutination reactions in the twenty cases that had negative blood cultures. Cultures were made in most of those cases within five days before the crisis. As the organism was not in the blood at the time, it is evident that it was either in the blood before that time or was in the organs; otherwise reactions would not have been obtained against the organism. This is definite proof that the organism cannot be considered a secondary invader. I have just received a letter from Dr. Baehr in which he states that the blood cultures in the very first two cases of typhus fever which he and Dr. Plotz studied in Belgrade showed the typhus bacillus. The blood culture from the first case was taken on the fifth day and showed a larger number of organisms than that of any case so far studied. This is an additional proof that the bacteremia is more marked early than late. Probably the investigators who have been studying typhus fever in Serbia did not find the organism in any number of cases because the serum which they used was not favorable to the growth of the organism. As to immunization, it seems to me that it would be best before adopting the method suggested by Anderson, namely, injecting a patient with the virus of the disease, to try the injection of dead bacilli, then of sensitized living bacilli, and, finally, if it should be found necessary, small numbers of live bacilli from the endemic cases, these bacilli not being virulent. The experiments of Dr. Anderson are interesting, but it must be noted that his inoculations were all made intraperitoneally. Apart from that, the organisms used by Dr. Anderson were not virulent, and, again, from the results of immunity experiments on animals one can draw no binding conclusions as regards the efficiency of vaccination in human beings. Our best course will be to take the advice of Leishmann in connection with typhoid fever, to make a careful study in human beings.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Insanity, Baltimore

October, LXXII, No. 2, pp. 223-426

1 Study of Eugenic Forces. A. J. Rosanoff, Kings Park, N. Y.
2 Case of Retro-Anterograde Amnesia Following Gas Poisoning. P. C. Knapp, Boston.
3 Study in Social Maladjustment. H. B. Moyle, Brookline.
4 Paraphrenia Erotica. M. J. Karpas, New York.
5 Psychoses of High Imbecile. H. J. Berkley, Baltimore.
6 Some of More Recent Problems Connected with State Care of Insane. J. V. May, Albany, N. Y.
7 Value of Routine Laboratory Work in Psychiatry. P. G. Weston and I. Darling, Warren, Pa.
8 Institutional Stasis. H. C. Eyman, Massillon, Ohio.
9 Therapeutic and Economic Value of Diversional Occupation. B. D. Evans and F. M. Mikels, Morris Plains, N. J.
10 Voice in Tabes—Voice Sign. W. B. Swift, Boston.
11 Treatment of Paresis and Tabes Dorsalis by Salvarsanized Serum. (To be continued.) H. A. Cotton, Trenton, N. J.

American Journal of Medical Sciences, Philadelphia

November, CL, No. 5, pp. 625-780

12 *Roentgen Diagnosis of Gastric Cancer; Report of Twelve Cases. R. D. Carman, Rochester, Minn.
13 Significance of Acro-Ataxia and Proximo-Ataxia. C. F. Hoover, Cleveland.
14 *Studies of Nephritis. H. A. Christian, C. Frothingham, Jr., J. P. O'Hare and A. C. Woods, Boston.
15 Studies in Moniliasis of Digestive Tract in Porto Rico. B. K. Ashford, U. S. Army.
16 Occurrence of Sprue in United States. E. J. Wood, Wilmington, N. C.
17 *Gangrene of Lung. G. D. Head, Minneapolis.
18 *Luetin Reaction in Diagnosis of Tertiary and Latent Syphilis. F. M. Hanes, Richmond, Va.
19 *Friedlander Bacillus Pneumonia; Report of Cases. W. R. Sisson and C. B. Thompson, Boston.
20 *Elimination of Acetone and Diacetic Acid in Two Hundred and Fourteen Surgical Cases. M. R. Bradner and S. P. Reimann, Philadelphia.
21 Luetic Arthropathies. W. H. Higgins, Richmond, Va.

12. **Roentgen Diagnosis of Gastric Cancer.**—The records of the Mayo clinic, according to Carman, show that in a large series of cases confirmed by operation, 67 per cent. of the patients had palpable tumors and 53.3 per cent. had food remnants. In other words, 33 per cent. had no palpable tumors and 46.7 per cent. had no food remnants to indicate obstruction. It is precisely in those cases, says Carman, which show neither tumor nor food remnants, that the Roentgen rays have their greatest field of usefulness and superiority. It is no longer necessary to wait until the tumor is palpable or until evidences of marked obstruction exist. He does not say that the clinical data should be discarded. On the contrary, the roentgenologist should in every instance be acquainted with the clinical facts. If suggestive of cancer, they will stimulate him to a more exhaustive search. If negative, they will exercise a wholesome restraint on his interpretation of the reflex phenomena so often produced by conditions outside the stomach. More important still, the final diagnosis should be compatible with all the findings, if possible, and occasionally only their correlation will make the diagnosis. A combination of all methods forms a net through which few cancers will escape.

The roentgenologic manifestations of gastric cancer include departures from the normal contour, pyloric action, peristalsis, motility, flexibility, mobility, position and size of the stomach. Enumerated in the order of their relative importance, these signs are: 1. Filling defects. 2. Alterations of pyloric function: (*a*) gaping of the pylorus; (*b*) obstruction of the pylorus. 3. Perversion of peristalsis: (*a*) absence of peristalsis from involved areas; (*b*) weak peristalsis; (*c*) antiperistalsis; (*d*) exaggerated peristalsis; (*e*) irregular peristalsis. 4. Altered motility: (*a*) rapid and early emptying (nonobstructive cases); (*b*) delayed emptying (obstructive cases). 5. Lessened flexibility. 6. Lessened mobility. 7. Diminished size (capacity). 8. Displacement. Roentgenologic determination of the absence or presence of obstruction, its site and degree, aids materially in judging the advisability of palliative surgery and in selecting the operation, whether gastro-enterostomy or gastrostomy, or jejunostomy. In expressing any opinion as to operability, unless the cardia or upper media is definitely implicated, or unless the growth is extraordinarily extensive, the roentgenologist should be chary of saying that a case is inoperable, as he may thus deprive the patient of relief or cure at the hands of the surgeon. In the majority of instances exploration alone is the final word and the patient should be given the benefit of the doubt.

14. **Nephritis.**—The authors summarize the results of their extensive study as follows: A. Test renal meals in relation to renal function. 1. Of two general methods used the v. Monakow standard diet with days of added salt or urea and the Hedinger and Schlayer test day on a mixed diet, the first requires about ten days of hospital study and the second three days. Using the two methods on a series of patients the authors have obtained similar results by each. 2. Though similar, the results are not quantitatively identical. The same is true for the same test repeated several times on the same patient. 3. For the Hedinger and Schlayer test there is no constant normal curve of excretion. Normality consists in the ability to vary from period to period the amounts and concentration of the substances quantitated. Abnormality consists in a more or less marked degree of fixation in all of these values from period to period. 4. Fixation in excretion of nitrogen seems to develop at a later period in most cases than is true for water and salt.

B. Quantitative studies of nonprotein nitrogenous bodies of the blood. 1. Urea nitrogen in a series of cases averaged 63.4 per cent. of the total nonprotein nitrogen of the blood, and its increase was usually proportionate to the increase of the total nonprotein nitrogen. 2. Ammonia nitrogen increased slightly but not proportionately. The same held for uric acid and amino-acid nitrogen. 3. Creatinin showed roughly a proportionate increase. 4. The difference between determined forms of nitrogen and total nonprotein nitrogen was greatest in cases with clinically most severe symptoms. 5. In the spinal fluid the increase in nitrogen is almost solely in urea nitrogen except in cases of anuria. 6. The authors can see no advantage in quantitating the nitrogen of the spinal fluid over quantitating it in the blood. 7. No relationship existed between the amount of nonprotein nitrogen in the blood and changes in the retina.

C. Diuresis in relation to diuretics. 1. Diuresis is relatively infrequent in the average hospital patient. 2. Except for diuresis in cardiac cases following digitalis, diuresis bears an inconstant relation to diuretic drugs. 3. In cases of nephritis with or without edema and without cardiac decompensation, diuretic drugs often fail to produce a striking diuresis. Their observations justify a healthy skepticism as to the efficacy of diuretic drugs in cases of nephritis without cardiac decompensation.

D. Functional tests in relation to anatomic changes in the kidney. 1. In eighteen cases of chronic nephritis, the patients dying and coming to necropsy, no constant relations have been found between anatomic lesions and renal function in so far as excretion of phenolsulphonephthalein, albumin in the urine, casts, presence or absence of edema, blood-pressure determinations, etc., are concerned.

17. **Gangrene of Lung.**—In Head's case the diagnosis of gangrene of the lung was made by plunging a long exploring needle into the area of lung involved and withdrawing about 5 c.c. of dark-colored fluid having the typical smell of gangrene and containing cellular elements of a peculiar type. Without this evidence, Head says, the diagnosis of gangrene of the lung could not have been made, since neither the breath of the patient nor the sputum coughed up gave out an odor suggestive to gangrene.

18. **Luetin Reaction in Syphilis.**—From the study of the luetin reaction in 200 medical cases presenting themselves for diagnosis, the following conclusions are drawn by Hanes: 1. The luetin reaction when positive is absolutely specific. The author has not seen a single positive reaction in a case free from symptoms and physical signs of syphilis. 2. The reaction is of limited value in other than tertiary cases. 3. The luetin reaction is a more delicate test for latent and tertiary syphilis than is the Wassermann reaction. 4. Patients suffering with visceral syphilis give positive luetin reactions with great constancy. This seems especially true of cardiovascular syphilis. The luetin test represents a distinct advance in the diagnosis of syphilis, and is a helpful supplement to the Wassermann test in the diagnosis of tertiary syphilitic lesions.

19. **Friedländer Bacillus Pneumonia.**—The study of four cases leads Sisson and Thompson to conclude that there exists a type of lobar pneumonia, *sui generis*, that is caused by the *Bacillus mucosus capsulatus*. Clinically, this so-called "Friedländer pneumonia" is subject to great variation. The exact diagnosis is difficult to make clinically, but is aided by the identification of the Friedländer bacillus, both in the blood and sputum. The pathologic findings taken together are usually quite typical for this form of pneumonia.

20. **Acetone and Diacetic Acid.**—Bradner and Reimann found that acetone occasionally accompanied by diacetic acid was eliminated in the urine of 182 out of 214 consecutive surgical patients (in 23.3 per cent. before surgical intervention and in 61.7 per cent. after operation, under ether anesthesia). The temperament of the individual and the length of time preoperative treatment (of nothing by mouth and saline by bowel) had been carried out, appeared to have a slight positive effect on the acetone eliminated. Acetone and diacetic acid were eliminated oftener and in larger quantities in women than in men. The fact of surgery alone increased the acid, but the severity of the operation and the amount of obvious shock present had but little bearing on the amount of eliminated acid and the time of elimination.

Boston Medical and Surgical Journal

November 11, CLXXIII, No. 20, pp. 723-758

22 Legislation for Insane in Massachusetts, with Particular Reference to Voluntary Admission and Temporary Care Laws. F. E. Williams, Boston.

23 Report of Harvard University Service at American Ambulance, Lycée Pasteur, Neuilly-Sur-Seine, France. R. B. Greenough, Boston.

24 Artificial Pneumothorax. E. O. Otis, Boston.
25 State of Respiratory Mechanism in Pneumonia. J. H. Means, L. H. Newburgh and W. T. Porter, Boston.
26 Exercise in Treatment of Severe Diabetes. F. M. Allen, New York.
27 Statistics of New York State Hospitals for 1913, with Special Regard to Statistics Regarding Dementia Praecox. C. T. La Moure, Lakeville, Conn.
28 Studies in Speech Disorder. W. B. Swift, Boston.
29 Time-Saving Method for Multiple Sugar Analyses. B. H. Ragle, Boston.

Indiana State Medical Association Journal, Fort Wayne

October, VIII, No. 10, pp. 455-498

30 Relation of Endamebae to Alveolar Pyorrhea. C. C. Bass, New Orleans.
31 Pathogenesis of Spontaneous and Experimental Appendicitis, Ulcer of Stomach and Cholecystitis. E. C. Rosenow, Rochester, Minn.
32 *Position of Normal Stomach, with Observations on Movements of Diaphragm. B. D. Myers, Indianapolis.

32. Abstracted in THE JOURNAL, Oct. 24, 1914, p. 1499.

Journal of Abnormal Psychology, Boston

October-November, X, No. 4, pp. 225-296

33 Psychologic Analysis of Stuttering. W. B. Swift, Boston.
34 Origin of Supernatural Explanations. T. A. Williams, Washington, D. C.
35 Data Concerning Delusions of Personality; Association of Bright's Disease and Unpleasant Delusions. E. E. Southard, Boston.

Journal of Infectious Diseases, Chicago

November, XVII, No. 3, pp. 437-584

36 New Member of Aciduric Group of Bacilli. J. C. Torrey and A. H. Rahe, New York.
37 Proteolytic Enzyme of Bacillus Proteus. A. I. Kendall and A. W. Walker, Chicago.
38 Economical Intracutaneous Method for Testing Virulence of Diphtheria Bacilli. A. Zingher and D. Solet'sky, New York.
39 Etiology of "Symptomatic Anthrax" in Swine. K. F. Meyer, San Francisco.
40 Natural Hemolysins in Normal Horse Serum. F. Boerner, Jr., Philadelphia.
41 Effect of Bacterial Metabolism on Antigenic Properties and Serologic Reactions of Bacteria. J. P. Simonds, Chicago.
42 Lesions in Experimental Infection with Bacterium Tularense. P. G. Woolley, Cincinnati.
43 Varieties of Pneumococci Causing Lobar Pneumonia, with Especial Reference to Their Biologic Differences. G. Mathers, Chicago.
44 Importation of Typhus into United States. J. L. Kantor, Syracuse.
45 Nomenclature of Cocaceae. R. E. Buchanan, Ames, Iowa.
46 Effect of Anaphylactic Shock on Cellular Reaction of Peritoneum of Guinea-Pig. F. M. Rackemann, New York.
47 Outbreak of Roup and Chickenpox in Which High Mortality was Apparently Caused by Secondary Invader. B. A. Beach, H. Lothe and J. G. Halpin, Madison, Wis.
48 *Transmission and Administrative Control of Measles. H. F. Gray, Alto, Calif.

48. **Transmission and Control of Measles.**—From a study of an epidemic of 254 cases of measles when considered in connection with recent laboratory work on the disease, Gray believes that the following conclusions are justified: The minimal period from exposure to first symptoms was 7 days; the maximal, 14 days; the average, 11 days. The minimal period from the appearance of the first symptoms to the appearance of the exanthem was one day; the maximal, 7 days; the average, 3 days. The minimal period from exposure to the appearance of the exanthem was 11 days; the maximal, 19 days; the average, 13.5 days. The distribution between the sexes was nearly equal, with a slightly greater number of males than females. The average age of cases was, in males, 7.6 years; in females, 9.5 years. The incidence was greatest in males at 6 years of age; in females at 8 years. The cases in this epidemic were generally mild in character, only one severe case being reported. There were no deaths. The rate of attack per 10,000 of population was 487 (258 cases within the city limits in 1914 for a population of 5,300). Estimating an average case fatality of 4 per cent., one might have expected about 10 deaths. That they did not occur may be attributed to the mild character of the outbreak, to a general intelligent care of the cases, and to the excellent sanitary condition of the city.

Measles may be infective as early as five days prior to the appearance of the exanthem; the appearance of the rash marks probably the height of the infectiousness of the disease; the infectivity does not extend beyond 7 days after the appearance of the rash, and is probably shorter. The experience of the New York City department of health is that the disease is probably not infective 5 days after the appearance of the rash, and the experiments on monkeys would indicate that the infectiousness ceases with the approach of convalescence. The essential points in regulations for the control of measles are: The case shall be recognized and isolated at the earliest possible moment; the premises on which the case is isolated shall be placarded; the patient shall be isolated for at least five days after the appearance of the exanthem; adults and children who have previously had the disease need not be restricted, but it is advisable to warn them as to the slight possibility of second attacks, and keep them under observation; children who have not previously had measles and who are in contact with cases, need not be restricted for seven days after contact, but should thereafter be isolated for at least ten days and carefully observed. Disinfection after measles is useless and unnecessary. Transmission of measles by third persons or fomities must be exceedingly rare, if it occurs at all.

Journal of Laboratory and Clinical Medicine, St. Louis

October, I, No. 1, pp. 1-78

49 *New Method for Production of General Analgesia and Anesthesia. D. E. Jackson, St. Louis.
50 Specific Treatment in Typhoid. F. P. Gay, Berkeley, Calif.
51 Laboratory and Clinical Examinations. G. Dock, St. Louis.
52 Probable Toxic Effects of Prolonged Administration of Parathyroid Gland. R. S. Morris, Cincinnati.
53 Precancerous Conditions of Skin. M. F. Engman, St. Louis.
54 Staining Sections of Living Tissue, Unfixed. L. B. Wilson, Rochester, Minn.
55 *Intestinal Stasis and Intestinal Intoxications. P. G. Woolley, Cincinnati.

49. **Method for Production of General Analgesia and Anesthesia.**—Jackson describes a method for the production and maintenance of prolonged general analgesia or anesthesia by means of nitrous oxid, ethyl chlorid, ether, chloroform, ethyl bromid, etc., with oxygen. The method involves a continuous process of rebreathing of the gaseous or volatilized anesthetics from which the exhaled carbon dioxid, etc., have been removed and to which oxygen is constantly added in proportions suitable to maintain the patient in a satisfactory condition. The method involves the use of special apparatus which is so arranged as to give the anesthetist complete control of every phase of the anesthesia at all times. Great care has been taken to provide safety devices. So far Jackson has had an opportunity to try this method only on animals, but there seems to be good reason to expect that in man results entirely comparable to those produced in animals may readily be obtainable. For details the original article must be consulted.

55. **Intestinal Stasis and Intestinal Intoxications.**—Woolley summarizes his paper as follows: Absorption of bacteria and other substances from an unhealthy bowel may produce serious symptoms. A surgical operation for intestinal stasis is not justifiable except as a last resort. There is no definite information in the literature to show that surgical procedures, made for intestinal stasis, have been more successful than medical (including hygienic) ones. Many cases in which symptoms are attributed to intestinal stasis are suffering from focal infections entirely outside the intestinal tract. Such infections are illustrated by pyorrhea alveolaris, chronic tonsillar infection and chronic infections of the antra and sinuses of the head.

Journal of Nervous and Mental Diseases, Lancaster, Pa.

November, XLII, No. 11, pp. 721-784

56 New Clinical Instruments for More Precise Estimation of Muscle Strength and Tendon Reflex Threshold; Clinical Myosthenometer and Reflex Liminometer. F. Tilney, Brooklyn.
57 Statistical Study of Hallucinations in Manic-Depressive Type of Psychoses. J. E. Lind, Washington, D. C.
58 Two Successfully Operated Cases of Extradural Fibroma Compressing Cord. P. Bassoe, Chicago.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

November, VII, No. 4, pp. 385-555

59 *Similarity and Synergy of Morphin and Strychnin Action. H. McGuigan and E. L. Ross, Chicago.
60 Synergism of Morphin and Scopolamins. M. I. Smith, Ann Arbor, Mich.
61 *Action of Cocain. M. Kuroda, London.
62 *Blood Flow in Patient with Double Aortic and Double Mitral Disease. L. H. Newburgh and J. H. Means, Boston.
63 Effect of Caffein on Blood Flow in Normal Human Subjects. J. H. Means and L. H. Newburgh, Boston.
64 Apparatus for Perfusion of Isolated Organs. A. N. Richards and C. K. Drinker, Philadelphia.
65 Urine Formation by Perfused Kidney; Preliminary Experiments on Action of Caffein. A. N. Richards and O. H. Plant, Philadelphia.
66 Action of Phenylethylamin on Heart. H. G. Barbour and E. M. Frankel, New Haven, Conn.
67 Response of Surviving Uterus to Morphin and Scopolamin. H. G. Barbour and N. H. Copenhaver, New Haven, Conn.
68 Action of Caffein and Epinephrin on Vagus Nerve. H. G. Barbour and S. B. Kleiner, New Haven, Conn.
69 Morphin and Scopolamin Action on Intact Uterus. H. G. Barbour, New Haven, Conn.

59. **Similarity and Synergy of Morphin.**—From the work recorded by McGuigan and Ross the following conclusions are drawn: 1. Morphin when injected intraspinally into mammals (dogs and cats) in adequate doses will produce tetanus after a latent period. Codein which is apparently not oxidized in the body will not produce tetanus. 2. Morphin when oxidized to a certain degree and injected into the spinal canal of dogs or cats, or into the lymph of frogs, will produce tetanus more quickly than unchanged morphin. Artificially oxidized codein will also produce tetanus when injected in this way. Oxidized morphin when administered otherwise than directly into the cerebrospinal fluid will not produce convulsions in mammals (dogs). The strychnin-like action of morphin is apparently due to an oxidation product which is first produced and then destroyed in the body. Differences in the rate of oxidation will explain the varied reaction in different animals.

61. **Action of Cocain.**—Kuroda found that cocain first increases the activity of unstriated muscle and then depresses it, whatever be the nature of the sympathetic control. In some instances the phase of increased activity was not observed. The action of cocain in first stimulating and then paralyzing muscle fiber (including that of the iris) is analogous to its effects on other forms of living matter, including that on sensory organs when directly applied to them.

62. **Double Aortic and Double Mitral Disease.**—Determinations of the blood flow during rest and in response to increasing amounts of muscular work in a patient with valvular heart disease are reported by Newburgh and Means. No essential differences between the cardiac and normal subject were found. In both the normal and the cardiac subject the oxygen absorption and the blood flow showed a progressive rise with increasing amounts of work. This rise in blood flow was met at first chiefly by an increase in systolic output until a maximum was reached; after that by an increase in pulse rate.

Lancet-Clinic, Cincinnati

November 6, CXIV, No. 19, pp. 407-424

70 Psychoses in Twins. P. B. Newcomb, Osawatomie, Kan.
71 Acute Middle Ear Inflammations. J. W. Murphy, Cincinnati.
72 Medical Results at Tuberculosis Dispensary in 1914. J. L. Tuechter, Cincinnati.
73 Sarcoma of Upper Jaw Symptomatically Cured by Roentgen Ray. S. Lange, Cincinnati.
74 Medicine; Profession or Trade. H. Cabot, Boston.

Maine Medical Association Journal, Portland

October, VI, No. 3, pp. 137-168

75 Physician's Long Arm in Preventive Medicine. A. J. Torsleff, Bango.
76 Cancer of Breast. W. E. Gray, Milltown, Canada.

Medical Record, New York

November 13, LXXXVIII, No. 20, pp. 815-856

77 Rheumatism and Skin. W. P. Cunningham, New York.
78 Iodid of Potassium in Syphilis. D. W. Montgomery, San Francisco.
79 Arterial Tension in Connection with Cardiac Murmurs. P. E. Tiemann, New York.
80 Traumatic Hysteria; Trauma Cause or Occasion? D. B. Hardenbergh, Middletown.
81 Etiology of Pellagra. B. W. Page, Lumberton, N. C.
82 Gastric Symptoms in Tuberculosis. L. H. Levy, New Haven, Conn.
83 Impairment and Loss of Sexual Power in Acromegaly. W. A. Boyd, Baltimore.
84 Artificial Infant Feeding. J. Epstein, Brooklyn.
85 Interesting Obstetric Case. I. Eckert, New York.

Michigan State Medical Society Journal, Grand Rapids

November, XIV, No. 11, pp. 555-596

86 Spasmophilic Convulsions in Infancy; Their Differentiation and Treatment. C. G. Grulee, Chicago.
87 Admission of Indigent Patients to University Hospital, Ann Arbor, Mich. R. Peterson, Ann Arbor.
88 Trend of Medicine Fifty Years Ago. B. R. Corbus, Grand Rapids.
89 Suppurative Ethmoiditis. S. G. Miner, Detroit.
90 *Ureteral Obstruction; Report of Unusual Case. F. C. Witter, Petoskey.
91 Relation of Hysteria to Other Diseases. T. Klingmann, Ann Arbor.

90. Abstracted in THE JOURNAL, September 25, p. 1137.

New York Medical Journal

November 13, CII, No. 20, pp. 977-1024

92 Peritonitis. J. B. Deaver and D. B. Pfeiffer, Philadelphia.
93 Indigocarmin Test. C. G. Cumston, Geneva, Switzerland.
94 Cancer Treated with Autolysin. H. S. Williams, New York.
95 Treatment of Colles' Fracture. A. E. Hoag, New York.
96 Anesthesia by Rectum in Thyroidectomy. W. Lathrop, Hazleton, Pa.
97 Case of Primary Carcinoma of Appendix. J. Goldstone, New York.
98 Clinical Teaching. M. Schulman, New York.
99 Suspected Thoracic Aneurysm with Death from Rupture. F. Griffith, New York.
100 Trachoma and Follicular Conjunctivitis. M. B. Beals, New York.

Ohio State Medical Journal, Columbus

October, XI, No. 10, pp. 605-658

101 Analgesics and Anesthetics in Labor; Their Indications and Contraindications. W. Gillespie, Cincinnati.
102 Pregnancy Complicating Tuberculosis. J. J. Thomas, Cleveland.
103 *Direct Treatment of Cerebrospinal Syphilis According to Methods of Swift and Ellis. C. L. Cummer and R. Dexter, Cleveland.
104 Extraction of Lens as Seen in Some of European Clinics. C. C. Stuart, Cleveland.
105 Amebic Bowel Infection in Ohio. W. H. Lewis, Newark.

103. **Treatment of Cerebrospinal Syphilis.**—Summarizing their work Cummer and Dexter find that they have given fifty-five intraspinous injections of serum. They have had no untoward or unfortunate results in any instance. There have been no deaths, paralyses, or bladder disturbances. With all patients but two sharp reactions have occurred following the intraspinous injections. When any form of crisis or lancinating pain has been present, the reaction has usually taken the form of an acute exacerbation of this symptom. In some instances the reaction has been of a most aggravated nature. The compensation to the patient, however, is that the greatest improvement has usually followed with those who have had the most intense reactions and conversely, they have come to expect little or slight betterment in those in whom the reactions were slight or were absent. The lymphocytosis, even when as high as 153, disappears quite promptly, after one, two or three injections. The globulin test is usually slower to disappear. In some instances, it does not clear up until much treatment has been given. As to physical findings, practically the only changes the authors have been able to detect have been restoration of sensation, when this had been impaired, disappearance or practically disappearance of Romberg's sign, increase in muscular strength, and a diminution in ataxia. In no instance have they noted pupillary reactions return to normal, nor have absent deep reflexes reappeared.

In every instance in which lancinating pains were present, they have either disappeared entirely or are so much diminished that the annoyance to the patient is comparatively slight. The striking feature is the improvement in general condition, in weight, strength and well-being. In certain instances this is partially attributable to the freedom from pain, but in other cases in which pain had not been a feature, this general betterment was noted at once. Vesical incon-

tinence in one case has been so much less frequent that it has almost ceased to be an annoyance. The sum total in five cases has been a symptomatic improvement so decided that the patients' economic efficiency is restored and they are able to do their work and enjoy life as normal people. Concluding, the authors feel that they can state fairly that the Swift-Ellis method is safe when the original technic is followed painstakingly. Persistence is necessary to secure the best results.

Oklahoma State Medical Association Journal, Muskogee

November, VIII, No. 6, pp. 185-216

106 Serum Therapy, Its Uses and Abuses. L. H. Huffman, Hobart.
107 Crippled Mothers. S. H. Landrum, Altus.
108 Obstetrics in Country Practice. F. R. Wheeler, Mannford.
109 Abdominal Cesarean Section. C. D. F. O'Hern, Tulsa.
110 Definite System for History Taking and Case Record Filing. W. D. Berry, Muskogee.

Ophthalmology, Seattle

October, XII, No. 1, pp. 1-212

111 Surgical Removal of Tarsal Cartilage and Palpebral Conjunctiva in Four Hundred and Two Cases for Prophylaxis, Present and Future Elimination and Eradication of Trachoma. D. W. White and P. C. White, Tulsa, Okla.
112 Some Clinical Studies on Trachoma Question. E. E. Edmondson, Mt. Vernon, Ill.
113 Carcinoma of Caruncle; Report of Case. P. H. Dernehl, Milwaukee.
114 Local Anesthesia in Surgery of Iris and Lens. P. de Obarrio, San Francisco.
115 Complete Left Lateral Hemianopsia with Glycosuria as Result of Slight Trauma. F. E. Woodruff, St. Louis.
116 Triple Rupture of Choroid with Iridodialysis. L. F. Appleman, Philadelphia.
117 Is Migraine Forerunner of Glaucoma? R. S. Lamb, Washington, D. C.
118 Color Testing. G. H. Taylor, New South Wales, Australia.

Providence Medical Journal

November, XVI, No. 6, pp. 293-332

119 Care of Tuberculous. J. Perkins, Providence.
120 Appendicitis. J. W. Keefe, Providence.
121 Plea for Study of Pancreatitis. J. B. McKenna, East Providence.

South Carolina Medical Association Journal, Anderson

October, XI, No. 10, pp. 304-336

122 Control of Hemorrhage in Tonsil Enucleation. J. W. Jervey, Greenville.
123 Ovarian Cysts; Report of Case in Which Tumor Weighed Eighty-Five Pounds. S. O. Black, Philadelphia.
124 Ether Anesthesia. W. A. Boyd, Columbia.
125 Place of Laboratory Branch in Medical Education and Practice. K. M. Lynch, Charleston.
126 Milk in Diet of Infants. D. L. Smith, Spartanburg.
127 Stone in Wharton's Duct. R. T. Ferguson, Gaffney.
128 Banti's Disease; Report of Operative Case. B. B. Steedly, Spartanburg.
129 Tubercular Meningitis. R. M. Politzer, Charleston.

Southern Medical Journal, Mobile, Ala.

November, VIII, No. 11, pp. 925-1014

130 Report on Sanitation of Guayaquil. W. C. Gorgas, Washington, D. C.
131 *Relation of Bovine Infection in Child to Clinical Tuberculosis in Adult. F. M. Pottenger, Monrovia, Calif.
132 *Treatment of Honduranian Balantidiosis. N. Barlow, Cuyamel, Honduras.
133 Importance of Cerebrospinal Fluid Examinations in Syphilis of Central Nervous System. S. R. Miller, Baltimore.
134 Hereditary Syphilis in Negro Race. N. M. Moore, Augusta, Ga.
135 What Civil Surgeon Can Do for Military Surgery in Times of Peace. J. C. Bloodgood, Baltimore.
136 One Thousand Operations for Appendicitis. W. D. Haggard, Nashville, Tenn.
137 Uses and Limitations of Blood Vessel Suturing, with Special Reference to Reversal of Circulation. J. S. Horsley, Richmond, Va.
138 Neglected Eyes; the Cost. J. F. Woodward, Norfolk, Va.
139 Laryngeal Tuberculosis. J. B. Greene, Asheville, N. C.

131. **Relation of Bovine Infection in Child.**—If bovine infection quiets down and remains inactive for a time, to break down in later life the same as the human infection does, it certainly does not show as a bovine infection when it does become active again. Unless transmutation occurs and the bovine bacilli of the early infection changes and becomes of the human type, Pottenger believes we are compelled to assume that bovine infections in childhood do not, except rarely, produce metastases in later life, and that, in this, they are wholly unlike human infections. The most rational explanation of the facts observed requires the acceptance of the idea of transmutation.

132. **Treatment of Honduranian Balantidiosis.**—The balantidiosis of Honduras, if uncomplicated by pathogenic amebae, according to Barlow, is best treated by methylene blue, 2 grains three times daily, not less than four days. If an endamebic or similar infection is also present, emetin combined with oral administration of some suitable form of ipecac will be appropriate for both infections. Especial stress is placed on the oral administration, and not less than ten days of continuous treatment. With either method, at least three thorough cleansings should be given the intestines, at the beginning, middle and end of treatment. If uncinariasis be present, thymol may be given if the patient is not debilitated.

Texas State Journal of Medicine, Fort Worth

October, XI, No. 6, pp. 313-360

140 Brain and Sinus Complications of Otitis Media, with Special Reference to Symptomatology. A. H. Andrews, Chicago.
141 Accessory Sinusitis. C. P. Schenck, Waco.
142 Case of Double Chronic Maxillary Sinusitis Complicated with Unilateral Ethmoiditis. E. M. Sykes, San Antonio.
143 Some Investigations Concerning Mysterious Form and Function of Internal and Middle Ear. W. F. Cole, Waco.
144 Excessive Bleeding at Menstrual Period. F. R. Winn, Alvin.
145 Placenta Praevia; Report of Case. T. E. Hunt, Hillsboro.
146 Some Pathologic Conditions of Breasts. M. A. Wood, Houston.
147 Allergic Reactions in Pregnancy. J. H. Black, Dallas.

Wisconsin Medical Journal, Milwaukee

October, XIV, No. 5, pp. 181-220

148 *Disturbances of Central Nervous System Accompanying Pernicious Anemia; Report of Two Cases. A. W. Rogers, Oconomowoc.
149 Nose and Throat in Etiology of General Diseases. R. W. Porteus, Rochester, Minn.
150 Cystoscopy in Surgical Diseases of Bladder and Kidney. E. A. Fletcher, Milwaukee.

148. **Nervous System in Pernicious Anemia.**—Rogers concludes his paper as follows: It would seem that pernicious anemia was the result of a toxemia or autotoxemia acting on the tissues of the body in general, but showing a selective action for certain tissues, preferably the red blood cells and nervous tissue. Certain types of pernicious anemia, in cases in which symptoms indicating involvement of the nerve centers are first to appear, may readily be confounded with tabes, paresis, myelitis, insular sclerosis and even hysteria, the diagnosis resting with the blood examination. In cases of pernicious anemia with marked involvement of nerve tissues, the blood findings are less characteristic and, too, these cases manifest a greater tendency toward remissions, making the prognosis more favorable.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

October, XII, No. 142, pp. 289-320

1 Education of Children with Defective Vision. N. B. Harman.
2 Case of Extra-Genital Primary Chancre of Wrist. G. Pernet.
3 Case of Extensive Pigmented and Hairy Nevus with Molluscous Tumors. W. M. Smith.

British Medical Journal, London

October 23, II, No. 2860, pp. 593-628

4 *Analysis of Cases of Tetanus Treated in Home Military Hospitals. D. Bruce.
5 *Hemolytic Action of Urine in Certain Conditions. C. S. McKee.
6 Ureteral Calculus; Its Symptoms and Treatment. D. Newman.
7 Epidemic Jaundice in War-Time. S. Moritz.
8 Malaria Contracted in Flanders. J. M. H. Reid and H. E. Humphrys.

4. **Tetanus Treated in Home Military Hospitals.**—In December, 1914, a return of cases of tetanus was called for from British home military hospitals, and an army form issued. Notes on 231 cases were sent in; of these, 98 recovered and 133 died, a mortality of 57.7 per cent. The death rate in

untreated cases is stated to be 91 per cent. in those of short incubation, 50 per cent. in those of delayed incubation. If the symptoms of tetanus appeared within ten days of receiving the wound, the mortality was 66.6 per cent.; if between the eleventh and twenty-fifth day, 39 per cent. Among the 231 cases, only 37 patients are noted as having been treated with antitetanic serum before the onset of symptoms. Of these 18 recovered and 19 died, a mortality of 51.3 per cent. The usual dose was 1,500 units, but 1,000 were given in 3,500 in 2 and 4,000 in 2 cases. The average incubation period of 17 fatal cases was thirteen days; of 15 patients which recovered 18.5 days.

Out of the total of 231 cases the number of patients treated with antitetanic serum after the onset of symptoms was 215 (93 per cent.). Sixteen patients did not receive curative treatment with antitetanic serum in England. Of these, 3 recovered and 13 died; mortality, 81.25 per cent. Of the 3 which recovered, all had been treated prophylactically in France. Of the 13 who died, 6 had been treated prophylactically in France. Of the 215 patients, 116 were treated by subcutaneous injections alone; 46 recovered, 70 died; 7 were treated by intravenous injections alone; 1 recovered, 6 died; 14 were treated by intrathecal injections alone; 8 recovered, 6 died; 17 were treated subcutaneously and intravenously; 5 recovered, 12 died; 41 were treated subcutaneously and intrathecally; 23 recovered, 18 died; 2 were treated intravenously and intrathecally; 1 recovered, 1 died; 16 were treated subcutaneously, intravenously and intrathecally; 8 recovered, 8 died; 73 were treated intrathecally with or without subcutaneous or intravenous injections; 40 recovered, 33 died. It would appear that injections of antitetanic serum into the spinal canal are more effective than subcutaneous or intravenous injections. Out of 200 cases 4 patients received 1,000 units or under; 2 recovered, 2 died; 61 received from 1,001 to 5,000 units; 24 recovered, 37 died; 50 received from 5,001 to 10,000 units; 14 recovered, 36 died; 20 received from 10,001 to 15,000 units; 12 recovered, 8 died; 19 received 15,001 to 20,000 units; 6 recovered, 13 died; 19 received from 20,001 to 30,000 units; 10 recovered, 9 died; 14 received from 30,001 to 40,000 units; 9 recovered, 5 died; 13 received from 40,001 to 147,000 units; 9 recovered, 4 died.

The main conclusion drawn by Bruce from a study of these patients treated therapeutically by antitetanic serum is that it seems highly probable that the serum has little or no effect on the course of the disease. There is a little evidence that, if the serum has any effect at all, then the intrathecal method of injection is the most effective in as large dose as possible, and repeated as often as safe and practicable as long as symptoms persist. If there is any likelihood that tetanus toxin is still being absorbed into the blood stream from the wound, then, in addition to the intrathecal injection, a further quantity of serum may be introduced intravenously and subcutaneously. In this way 3,000 to 5,000 units could be injected into the spinal canal and 10,000 to 20,000 into vein and under the skin. Thirty-three patients were treated by phenol injections; 12 patients recovered and 21 died (63.6 per cent.). Nine patients were treated with magnesium sulphate; of these 7 patients died and 2 recovered. Bruce sums up the treatment of a case of tetanus as follows: (a) Place in a quiet, darkened room under care of a sympathetic and capable nurse. (b) The best surgical treatment of the wound should be thoroughly carried out to insure the prompt and complete removal of all septic products. (c) The intrathecal injection of at least 3,000 units of antitetanic serum. At the same time 10,000 to 20,000 units may be injected intravenously and subcutaneously. This procedure to be repeated as frequently as the course of the disease seems to demand. (d) In addition to this the patient should receive sedative drugs, such as chloral or chlorbutanol in full doses.

5. **Hemolytic Action of Urine.**—A phenomenon found by McKee to be of fairly constant occurrence in certain morbid states, is here described, namely, the rapid laking of blood corpuscles by the urine. It has never been noted in the urines of normal individuals. The agent causing this hemolysis is left an open question, but there is no doubt in McKee's mind that it is not a normal constituent of the urine. Save in the case of certain strongly hemolytic alkaline urines, of which one drop sometimes causes instant laking of the blood emulsion at room temperature, the hemolytic process requires incubator temperature of 37 C. Sodium bicarbonate definitely influences the reaction in vitro, and possibly when administered to patients by mouth. This appearance of a body or bodies in urine of a more or less actively hemolytic nature, is a fairly frequent accompaniment of grave disturbances of metabolism. In severe chronic anemia the reaction is frequent, but not of daily occurrence, and after having tested and cross tested the red cells of several pernicious anemia cases, it appears that some patients' cells are much more resistant than others, but also that all are less resistant than normal cells. The reaction is obtainable in erysipelas, gout, acute rheumatic fever, advanced tuberculosis, and certain cases of syphilis. In acute rheumatic fever the urine was found to lake blood cells in all cases at some period during the course of the disease, in most cases all through the acute stage. The same has been true of severe erysipelas and streptococcal throat cases. In syphilis the reaction depended on the severity of the symptoms. In all severe burns the urine has been regularly hemolytic and has remained so until death, or recovery was well assured. In some cases of skin disease in which a large part of the skin surface has been involved, laking by the urine has been common and persistent. In two cases of phenol poisoning the urine, twenty-four hours later, was intensely hemolytic and remained so till death. In starvation the reaction appeared to depend on the severity of the symptoms. In cancer with wasting, the reaction has always, so far, been present. In septic cases also it is common.

Journal of Royal Naval Medical Service, London

October, I, No. 4, pp. 373-509

9 Report on Cerebrospinal Fever in Royal Navy. H. D. Rolleston.
10 Use of Hypochlorous Acid as Antiseptic in Naval Medical Service. H. E. R. Stephens.
11 Surgical Technic on Board Royal Naval Hospital Ship Drina. R. J. Willan.
12 Possible Recurrence of Mediterranean or Undulant Fever and Its Treatment by Sensitized Vaccines. P. W. Bassett-Smith.
13 Vital Importance of Efficient Training of Naval Ratings in First Aid. R. J. G. Parnell.
14 Mental Conditions as Observed Among Ship's Company of Battleship in War-Time. T. Beaton.

Lancet, London

October 23, II, No. 4808, pp. 901-956

15 *Cases of Tetanus Treated in Home Military Hospitals. D. Bruce.
16 Pellagra. F. M. Sandwith.
17 Treatment of Cerebrospinal Fever in Royal Navy. H. D. Rolleston.
18 Traumatic Asphyxia; Report of Case. W. W. Linington.
19 Condition of Lungs during Recovery from Chest Wounds. T. G. Brodie and J. J. Mackenzie.
20 Nystagmus and Allied Conditions. J. A. Wilson.
21 Effect of Nauheim Baths on Cardiac Conductivity and Contractility. L. T. Thorne.
22 Anesthesia (General and Spinal) for Suprapubic Prostatectomy. J. D. Mortimer.
23 Cases of Diarrhea from Gallipoli. A. E. A. Ismail.
24 Case of Tapeworm Accompanied by Hemoglobinuria. W. E. Masters.
25 Case of Complete Inversion of Uterus. C. L. Fraser.

October 30, No. 4809, pp. 957-1008

26 Wound Infections and Their Treatment. (To be continued.) A. E. Wright.
27 Case of Tetanus of Short Incubation Period (Five Days) with Recovery. R. L. Scott.
28 Four Cases of Congenital Pulmonary Stenosis. D. Martin.
29 Use of Hypertonic Saline Solution in Gynecology. C. White.
30 Three Cases of Concussion Aphasis; Treated by General Anesthesia. A. P. Procter.
31 Case of Self-Inoculation with Bacillus Aerogenes Capsulatus. K. Taylor.

15. See *British Medical Journal*, Abstract No. 4.

Quarterly Journal of Medicine, London

October, IX, No. 33, pp. 1-65

32 *Clinical Observations on Atrioventricular Rhythm. G. D. Mathewson.
33 *Case of Pancreatic Insufficiency. E. I. Spriggs and A. J. Leigh.
34 *Researches on Perfused Heart. W. Burridge.
35 Recent Researches Dealing with Typhoid and Paratyphoid Infections. A. C. Inman.

32. **Atrioventricular Rhythm.**—A case is recorded by Mathewson which displayed a rhythmic change in the mode of the heart's contraction. Graphic records showed that the beat was initiated by the sino-auricular and atrioventricular nodes alternately. A corresponding rhythmic change in the first sound and in an accompanying mitral murmur was observed on auscultation. The rate of the beat during the atrioventricular rhythm was either equal to, or slightly less than, that of the periods of normal rhythm. Observations were made on the effect produced by stimulation and depression of the controlling nerves on the heart's mode of contraction. Recurrent increase of vagal tone is suggested as a possible explanation of the alternating rhythm.

33. **Case of Pancreatic Insufficiency.**—A patient with the symptoms of chronic disease of the pancreas was under the observation of Spriggs and Leigh for twenty-one weeks, in five periods extending over eighteen months. The urine and feces were analyzed for sixty-four days, and compared with the intake of food. Trypsin could not be detected in the feces and Sahli's capsules were not digested. Diastase was present in the urine in normal amount. An average of 1,200 gm. of feces was passed in a day on admission. With the reduction of unassimilable forms of fat in the food the quantity was reduced to 800 gm. in the first period of treatment, much to the comfort of the patient. An average of 302 gm. of fat per day was lost in the motions on admission. This is higher than in any other case the authors have found recorded. From 25 to 59 per cent. of the caloric energy of the food was lost in this way. The proportion of fat in the food which was lost in the feces varied from 55 to 99 per cent. The emulsified fat of milk was much better absorbed than the fat of butter, meat or cod liver oil. The percentage absorbed was less when a large quantity of fat was given.

The proportion of the total fat in the feces which had been split, and was in the form of fatty acids and soaps, was rather more than is normal throughout, the average of fifty-four days' figures being 87 per cent. Variations in the quantity and nature of the fat did not affect fat-splitting appreciably. Nearly half the nitrogen of the food appeared in the feces. Sugar was present in the urine. At first it soon disappeared with suitable food, but each time the patient came under treatment a longer period on a restricted diet was required before the urine became sugar-free. In the intervals of treatment unsuitable food was eaten. There was no evidence of acidosis. Various ferments were used in experimental periods. All except fresh pancreas and trypsogen irritated the intestinal tract. With a proprietary trypsin preparation there was improvement in the absorption of fat, and with a tannin pancreatin compound improvement in the absorption of nitrogen. The general condition of the patient improved considerably with each period of rest and treatment.

34. **Researches on Perfused Heart.**—Burridge claims that the two muscular functions of contractile capacity and ability to contract in respect to excitation by induced shocks are entirely distinct. In every heart examined it was possible by employing potassium salts to demonstrate the presence of a certain capital stock of contractile material. This capital stock is designated C. C is a quantity varying from heart to heart, but constant in value under ordinary conditions in any particular heart. The variations in amplitude of the spontaneous contractions correspond to variations in the proportion of the total contractile material evoked by the normal stimulating agency of the blood. The majority of drugs, though they may cause great variations in spontaneous activity, do not alter the value of C. Its value seems only altered by coagulation or rigor. Two groups of phenomena are described, to each of which the term cardiac failure is applied: (a) Cases in which the amplitude of these spontaneous contractions has increased, but in which by using potassium it can be shown that the capital stock of contractile materials is undiminished—C unchanged; (b) cases in which the amplitude of the spontaneous contractions has diminished, accompanied by a corresponding diminution in the amplitude of the contraction then evoked by potassium—C diminished. The two types may be combined in any one heart. Digitalis can restore the amplitude of the spontaneous contractions toward their original value in cases of the first type only. Accordingly, it is concluded that the condition of the heart in clinical cardiac failure is of that type also.

An examination of cases of the first type shows that the failure in them results from alteration in the relation of the heart to the calcium in the solution perfusing it. Two subdivisions are found. There are: (a) cases in which the heart beats are diminished in amplitude consequent on a decreased tension of calcium in the perfusing solution, the heart itself remaining "normal"; (b) cases in which the composition of the perfusing fluid remains constant, but in which the heart itself reacts less vigorously to calcium than it did originally. The mechanism for maintaining and utilizing the cardiac reserve is suggested to be as follows: The heart has a certain capital stock of contractile material, the activity of which is evoked by the calcium of the blood. Under ordinary circumstances the relations between the heart and the blood calcium are such that the calcium evokes the activity of a certain proportion of the whole. By altering the magnitude of response of the heart to calcium a greater or less proportion of that whole is rendered active. During sympathetic stimulation a given tension of calcium can evoke the activity of greater proportion of the whole cardiac contractile material than was the case before such stimulation. In clinical cardiac failure the response of the heart to such amounts of calcium as are at present in blood is sufficient to maintain an adequate circulation. Digitalis is a drug which enables a given tension of calcium to evoke the activity of a greater proportion of the whole contractile material than is the case in its absence.

Annales de Gynécologie et d'Obstétrique, Paris

September-October, XLI, No. 5, pp. 609-668

36 *Radium Treatment of Cancer of Uterine Cervix. P. Degrais.
37 *Indications for Radium Treatment of Uterine Cancer. Fabre.
38 Is Partial Resection of Sclerous Ovaries Justified? (La résection partielle des ovaires reconnus macroscopiquement scléreux ou scléro-kystiques, est-elle justifiée au point de vue microscopique?) J. P. de Figueiredo. Commenced in No. 4. To be continued.

36. **Radium Treatment of Cancer of the Cervix.**—Degrais remarks that as the term radiotherapy is applied indiscriminately to various forms of application of radiant energy in therapeutics, it is liable to be confused with radium therapy. He suggests therefore the advantage of calling radium therapy "Curie therapy," just as we speak of Roentgen therapy, and for the same reasons. He has now had several years of experience with radium treatment, and regards it as a most valuable aid to surgery, applied after curetting or partial or total extirpation, or as a preliminary to render an inoperable growth operable. Even in the desperate cases, radium may relieve and render the condition more tolerable. The benefit from it in cases beyond the scope of surgery gives it a unique position in treatment of malignant disease. He has a number of patients who seem to be in perfect health, two, three or four years since cross-fire radium treatment of their cancers. He insists on the patients returning to be examined at regular intervals, and sometimes he gives another course of the treatment. In other cases the radium has been impotent to prevent return of the cancer. The indications and technic are discussed in detail. He always tries to utilize all the rays, with suitable filters, the cross-fire exposures including one tube in the rectum.

37. **Radium Therapy of Uterine Cancer.**—Fabre declares that in only about 25 per cent. of the cases of uterine cancer is the growth in a condition so that operative treatment can eradicate the malignant disease. Inoperable and recurring cancers should be treated exclusively with radium, operative measures in these conditions being only secondary and inadequate. On the borders of inoperability, radium may modify the growth until it can be successfully removed. Operable growths should always be removed, but even here radium therapy is important, as it tends to complete the surgical act and ward off recurrence. Ten typical cases are described in detail with the exact technic of the radium treatment applied, and the outcome.

Archives Mensuelles d'Obstét. et de Gynécologie, Paris

October, IV, No. 10, pp. 369-400

39 *Frequency of Coexistence of Myoma and Cancer in the Uterus. J. Olow.

40 *Glucuronic Acid in Urine Test of Liver Functioning in the Pregnant. (La glycuronurie de la grossesse.) R. Jean.

39. **Coexistence of Myoma and Cancer.**—Olow reviews the experiences at the gynecologic clinic of the University of Lund, Sweden. He found eight cases of malignant disease among the 205 operative cases of uterine myoma up to the year 1909. Since then eight new cases have been encountered among 154; 5.2 per cent. were thus complicated with cancer. This percentage is larger than that reported from most clinics, which he thinks is because the microscope is used more regularly at Lund than elsewhere, even when macroscopic indications of cancer are not apparent. The evidence thus presented in regard to the frequent coexistence of myoma and cancer is discussed from the standpoint of treatment of myomas. Consequently he mentions only parenthetically a number of other cases in which myomas were casually found in operating for uterine cancer. The significant fact is emphasized that in the myoma cases reported the presence of cancer had not been diagnosed in any instance before the operation, and had been suspected only in one case. In another case one ovary had been left after removal of nearly the whole of the uterus of a woman of 50, and necropsy in less than a year afterward showed a cancer that had developed from the stump of the ovary. Olow cites MacDonald's article in THE JOURNAL, 1909, lii, p. 952, accepting his conclusions. With regard to radium treatment, Olow thinks that if improvement is not promptly apparent, or symptoms recur soon afterward, operative measures should not be deferred further. The influence of radium treatment is particularly favorable on climacteric hemorrhages, and hence if conditions do not rapidly improve malignant disease is almost certain. The data cited suggest the advisability of total hysterectomy for myoma whenever conditions favor it, regardless of whether there is known cancer or not. They also suggest the advantage of removing the ovaries at the same time, when women are approaching the menopause, at least.

40. **Glucuronic Acid in the Urine During Pregnancy.**—Jean gives the simple technic for quantitative tests of glucuronuria, declaring that this should be a routine procedure in examining pregnant women. It should rank with the search for albumin and sugar, as it reflects the functioning of the liver and thus permits the discovery in time of impending insufficiency on the part of the liver.

Paris Médical

V, No. 9, pp. 165-180

41 First Treatment of Skull Wounds. (Traitement des coups de feu du crâne, dans las ambulances de l'avant.) A. Schwartz.

42 *Epidemic Tetragenemia; Thirty-Five Cases. F. Trémolières and P. Loew. Commenced in No. 5.

43 Local Steam Bath for Trophic Disturbances. L. Salignat.

44 Impressions of an Ambulance Surgeon in 1870. A. Le Dentu.

No. 10, pp. 181-196

45 A Laparotomy Service Close to the Firing Line. (Une salle d'opération sur le front.) A. Mignon.

46 Psychiatry and Legal Medicine in the Army. P. Chavigny.

47 Peritoneal Symptoms from Nonpenetrating Wounds of the Abdominal Wall; Nine Cases. J. Quénu.

Nos. 11-12, pp. 197-228

48 Prophylaxis of Cholera in the Active Army. C. Dopter.

49 Differentiation and Treatment of Diarrhea in the Active Army. Sacquépée, Burnet and Weissenbach.

50 Prophylaxis of Bacillary Dysentery. C. Dopter.

51 Prophylaxis of Typhus and Relapsing Fever. J. Renault.

52 Paratyphoid Fever. M. Labbe.

53 Cultivation of Typhoid and Paratyphoid Bacilli from the Blood. D. de la Rivière and J. Leclercq.

54 *Atypical Acute Meningitis. Lacoste and L. Boidin.

55 *Acute Meningitis Following Antityphoid Vaccination. (Démonstration de l'origine toxinique de certaines réactions puriformes aseptiques des méninges.) Moussaud and R. J. Weissenbach.

No. 13, pp. 229-244

56 After-Treatment of Wounded Nerves. (Technique de la libération des nerfs blessés.) O. Laurent.

57 Arrangement for Model Contagious Hospital in Connection with the Active Army. D. de la Rivière.

42. **Tetragenus Sepsis.**—Only one of the thirty-five patients died from the tetragenemia alone, but mixed infection seemed peculiarly grave. One patient died from tetanus; in another case the tetragenus seemed to be responsible for the flaring up of tuberculous or streptococcus processes. The pleura and lungs seem to be the favorite points where the tetragenus locates, and convalescence from the tetragenemia is long and tedious, with frequent relapses. The diagnosis was confirmed by the pronounced auto-agglutination when the patient's serum was added to a fresh culture of the microbe isolated from his blood. Clumping was marked in from half an hour to an hour and a half, while control cultures showed no change. The tetragenus is said to be a harmless dweller in the mouth, but it seems to acquire virulence under certain conditions. Forty-seven healthy men were examined in seeking for carriers, and the tetragenus was found in four. When it invades the blood and settles on the lungs and pleura, it is liable to induce pneumonia, congestion of the lungs and pleurisy of various types. In its milder forms, tetragenemia simulates influenza, and in the severe forms, typhoid and paratyphoid. Cultivation of the germ from the blood and the specific seroreaction indicate that it is a morbid entity that deserves consideration in the pathology of the troops.

54. **Atypical Meningitis.**—In three cases of meningitis with limpid spinal puncture fluid, one was tuberculous and the others the work of the Friedländer bacillus or of a paracolon bacillus. In six cases with turbid fluid only two were due to the meningococcus; in two others there was evidently an aseptic effusion. In both these cases the men suddenly developed severe headache with vomiting, pain in the spine and temperature of 40 C. (104 F.). One had herpes. Both men were given an injection of 40 c.c. of antimeningococcus serum and prompt recovery followed. Although the fluid looked turbid, yet the polynuclears were intact and the sugar and albumin were in normal proportions and there was no coagulation of fibrin, and no microbes could be cultivated from the fluid. It seems as if the meningitis in these cases must be the work of some germ not revealable by our present technics to date, but the infection, if such it be, is mild and tends toward a spontaneous cure. The series of atypical cases related were all sporadic, with no apparent connection between them except that they all occurred within a comparatively brief period.

55. **Aseptic Puriform Meningitis.**—In the case reported in detail a robust young man developed acute meningitis after his third inoculation against typhoid. Epidemic meningitis was suspected at first, but the fluid on lumbar puncture was sterile and merely puriform in aspect. Improvement was evident within twenty-four hours of the single evacuating lumbar puncture; the headache subsided, he ceased to vomit and the temperature went down. Two days later the stiffness of the neck and Kernig's sign also disappeared and lumbar puncture showed a clear fluid, normal except for a few lymphocytes. No focus of infection in the meninges or elsewhere could be discovered. It was learned later that the second antityphoid inoculation had been followed by violent headache, fever, chills and vomiting, the malaise keeping up for two days. The main differential features distinguishing the puriform from the purulent form of meningitis is that the polynuclears are intact and that the course is mild and brief. The case reported demonstrates anew that microbian toxins are able to irritate the meninges without the presence of living microbes.

Presse Médicale, Paris

October 11, XXIII, No. 48, pp. 393-400

58 *Distant Dystrophy of Muscles in the Wounded. (Sur certaines dystrophies musculaires du type myopathique consecutives aux traumatismes de guerre.) H. Claude, A. Vigouroux and J. Lhermitte.

59 Abortive Treatment of Infection in Wounds. (Traitement abortif de l'infection des plaies.) A. Carrell, Dakin and Others.

60 *Filtration of Boiled Water for Intravenous Injection. (Nouvelle simplification de la technique des injections intra-veineuses concentrées d'arseno-benzol.) P. Ravaut.

October 14, No. 49, pp. 401-408

61 *Prophylaxis and Treatment of Venereal Diseases in the Active Army. F. Balzer.

62 *The Toxins of Intestinal Worms. D. E. Paulian.

63 Ligation of Carotid Arteries. A. Broca.
64 Abortive Tetanus with Long Incubation and Protracted Evolution. H. Claude and J. Lhermitte.

October 21, No. 50, pp. 409-416

65 The Thumb Sign in Ulnar Paralysis. (La préhension dans les paralysies du nerf cubital et le signe du pouce.) J. Froment.

58. **Atrophy of Muscles in Wounded Soldiers.**—This communication refers to trophic disturbances in muscles which apparently have little or no connection with the wound. An illustrated description is given of four typical cases. The atrophy develops independent of any detectable lesion in the central or peripheral nervous system, and seems to be the result of nutritional disturbances in the muscle, primary or secondary to some reflex irritation. The men had all been wounded but at some point more or less remote from the scapular region which was the usual site of the muscular anomalies. The ultimate outcome is a question which time alone can answer.

60. **Intravenous Injections Without Distilled Water.**—Ravaut relates that distilled water is not to be had in his service near the firing line. He has found that it can be dispensed with and ordinary contaminated water used without harm, by the simple precaution of pressing the tip of the syringe down on a wad of cotton at the bottom of the dish in which the water has been boiled. By aspirating the water thus into the syringe through the thick wad of cotton, the water is effectually filtered and he makes the intravenous injection without apprehension.

61. **Prophylaxis of Venereal Diseases.**—Balzar reviews the experiences in this line in different armies during the present and other recent wars. He emphasizes the responsibility of the military medical authorities in supervision and control of sources of possible infection, in early detection of infection, and most effectual treatment. His recommendations for abortive treatment are based on his long experience at the Saint Louis Hospital in Paris. He insists that a special record must be kept by the physician of each case of gonorrhea or syphilis, and an individual record given each patient which he should present to each physician to whom he applies. These individual cards might be utilized for brief instructions and warnings as to the gravity of the disease. As models in this line he cites the bulletins issued by the Société de Prophylaxie sanitaire et morale during the last fifteen years, and Guiart's recent work, "Syphilis et blennoragie."

62. **Toxins of Helminths.**—Paulian injected guinea-pigs with alcoholic extracts of various intestinal parasites, including ascarides, oxyuris and tenia. Other tests were made with macerations of their bodies. He found evidences of severe toxic action, from congestion and hyperemia to actual degeneration of tissues, loss of resisting powers of the red corpuscles, intense anemia and eosinophilia. The nervous disturbances and even the eosinophilia may be regarded, he thinks, as phenomena of anaphylaxis. His findings confirm those reported by others except that he never detected the lesions described by Rachmanov in the nervous elements. The organs predominantly affected were the spleen, kidneys and liver, the latter showing fatty degeneration in one animal. The suprarenals were always hyperemic and with intertrabecular hemorrhages.

Berliner klinische Wochenschrift

October 18, LII, No. 42, pp. 1081-1104

66 Itching and Pain. (Jucken und Schmerz.) P. G. Unna. To be continued.
67 *Production of Bile Pigment Outside the Liver. (Ueber anhepatische Gallenfarbstoffbildung.) A. A. H. van den Bergh and I. Snapper (Groningen).
68 Standard Weight for Adults. (Die Gärtner'sche Normalgewichtstabelle für Erwachsene.) G. Oeder.
69 Experiences with Infectious Diseases in Field Hospital. Grundmann. To be continued.
70 *Hard Filtered Roentgen Rays in Treatment of Skin Diseases. F. M. Meyer.

67. Practically the same article was summarized in The Journal, Sept. 4, 1915, p. 913.

70. **Filtered Hard Roentgen Rays in Treatment of Skin Diseases.**—Meyer enumerates a number of advantages from using filtered hard rays, among them the less danger of a reaction, the shorter exposures required, and that various skin affections refractory to ordinary Roentgen treatment yield to the filtered hard rays, as he describes in detail.

Correspondenz-Blatt für Schweizer Aerzte, Basel

October 2, XLV, No. 40, pp. 1249-1280

71 *Treatment of Tetanus. T. Kocher.

October 9, No. 41, pp. 1281-1312

72 Blood Findings Reveal Leukemia in Puzzling Cases. (Die hämatologische Diagnostik der Leukämien.) A. Suter.
73 *Experiences with Smallpox. Tièche.

71. **Treatment of Tetanus.**—Kocher discusses some recently published cases of tetanus developing after prophylactic serotherapy and under magnesium sulphate treatment, and exonerates these two measures. In his own last three cases, the one adult died of pneumonia when the tetanus was under control. The two children were brought through safely. The tetanus was extremely severe in one of them, a boy of 10, with a six-day incubation and no antitetanus serum. Magnesium sulphate was given freely to keep the muscles constantly relaxed, first subcutaneously, then intramuscularly, to a total of 315 gm. of the sulphate, in a 25 per cent. solution, in the course of eighteen days. Kocher reiterates that the main point is to gain time, tiding the patient along until enough antibodies are produced to neutralize the tetanus toxin. The magnesium sulphate helps to tide the patient through this waiting period, and Kocher announces that by fractioning the maximal dose over the twenty-four hours it can be given for from six to eighteen days without harm. He regards his recent experiences as suggesting great progress in that they show that it is not necessary to give the full dose at one time, but that it can be distributed over the twenty-four hours, commencing with the largest fraction of the dose, and reaching the total dose of 1.5 gm. per 1 kg. weight before the close of the twenty-four hours. The severer the case, the larger the portion to be given at first, and it may be well to inject it into a vein or into the spinal canal.

He insists further that it is not necessary to give enough of the drug to relax the muscles completely; all that is necessary is to reduce the excitability of the centers to the point that the paroxysms no longer occur, even although some stiffness persists. Managed in this way, there is practically no danger of paralysis of the respiration. This is explained by Straub's discovery that the paroxysm-producing overexcitability subsides before the ability to respond to physiologic stimuli becomes paralyzed. He also comments on the cumulative action of the drug and its rapid elimination. The latter proceeds most rapidly after intravenous injection; next, after intramuscular, and most slowly after intraspinal injection. Kocher advocates prophylactic subcutaneous injection of 10 c.c. of antitetanus serum, repeated the fifth, eighth and twelfth days. If the magnesium sulphate is given by intraspinal injection he has the patient lie flat, only the head, not the neck, on a pillow. If the muscles of the trunk and chest do not relax, the head must be lowered, the whole body slanting downward. The deep narcosis which this induces is useful, but there is danger of arrest of respiration. He keeps the Meltzer apparatus beside the bed, ready to use it at the first sign of trouble, but he uses oxygen instead of air. The heart is not affected by the sulphate, and he emphasizes that the respiration stoppage is really not dangerous under proper care.

73. **Smallpox.**—Tièche relates a number of incidents from two recent visitations of variola in Swiss cantons where vaccination is not compulsory. The cases were mostly in imported laborers, but several occurred in persons who had been twice vaccinated. One unvaccinated small child developed smallpox in a building that had been used to house a few smallpox patients. The interval since the last case had been twenty-seven months, and the premises had been supposedly thoroughly disinfected at the time. His further

experience has confirmed the reliability of the skin allergy reaction in differentiating variola from varicella. (Described in THE JOURNAL, Nov. 7, 1914, p. 1702.) He relates several cases in which it proved a great convenience, definitely clearing away the suspicion of smallpox in hotel inmates or demonstrating the necessity for their immediate isolation.

Medizinische Klinik, Berlin

October 10, XI, No. 41, pp. 1119-1146

74 *Treatment of Suppurating Wounds of the Knee. (Zur Behandlung eiternder Knieschüsse.) H. Schloffer.
75 Surgical Preliminaries for a Functionally Capable Artificial Hand. (Chirurgische Vorarbeit für eine willkürlich bewegliche künstliche Hand.) F. Sauerbruch.
76 Experiences of a Surgeon During the Siege of Przemysl. R. Pamperl.
77 Importance of Dosage and Filtering in Roentgen Depilation. F. M. Meyer.
78 Simple Technic for Secondary Amputation. W. Pfeilsticker.
79 Fenestrated Plaster Casts for First Treatment of Fractures in War. (Erhebungen über die Brauchbarkeit der gefensterten Gipsverbände für die erste Behandlung der Schussfrakturen im Kriege.) C. Hempel.
80 Frame to Hold Stretchers for Operations. A. Partos.
81 First Measures in Case of Fracture. H. Spitzy and A. Hartwich. To be continued.

74. **Treatment of Suppurating Knee.**—Schloffer has been surprised by the excellent results obtained by opening up the suppurating joint, and immobilizing it held at an acute angle. He has applied this technic in eleven cases and was able to save the limb when amputation seemed otherwise unavoidable. The condition at the *Aufklappung* and the outcome later are shown in eight illustrations, and the advantages over resection are extolled. Even when bone has been shattered, resection may be restricted to removing merely the loose scraps.

Münchener medizinische Wochenschrift, Munich

October 12, LXII, No. 41, pp. 1381-1416

82 *Anaerobic Sepsis. B. O. Pribram.
83 Experiences with "Partial Antigen" Treatment of Tuberculosis. (Erste Erfahrungen mit Deycke-Muchschen Tuberkulosepartialantigenen im Hochgebirge.) W. Müller.
84 Early Exercises with Extension Dressings. (Frühmobilisierung im Zugverband.) A. Ziegler.
85 The Prothesis Question after Amputations. Spitzy.
86 Treatment of Gunshot and Shell Wounds of the Upper Arm. (Kriegsverletzungen des Oberarms.) E. v. Redwitz.
87 Mechanical Protection against Flies. (Zur Bekämpfung der Fliegengefahr.) Seelhorst.
88 Experiences in a Field Hospital. E. Sonntag. Commenced in No. 40.
89 Experiences of a Troop Medical Officer. (Erfahrungen eines Truppenarztes.) Haehner. Commenced in No. 40.
90 Roentgen Localization of Foreign Bodies, especially in Eye and Orbit. L. v. Liebermann, Jr.
91 Denunciation of Collective Inquiry on Sexual Abstinence. (Sammelforschung der Deutschen Gesellschaft zur Bekämpfung der Geschlechtskrankheiten über die Frage der sexuellen Abstinenz.) R. Schaeffer.

82. **Anaerobic Sepsis.**—Pribram found anaerobic bacteria of different kinds in the blood in some severe cases of gas phlegmon. He declares that the organism seems to be perfectly helpless against this invasion of the blood by the anaerobics, as their products cause rapid coagulation of the blood. From the finest capillaries to the larger vessels, all become plugged with thrombi, thus shutting off the oxygenated blood which would be unfavorable for the anaerobes. They can thus proliferate unmolested in the dead tissues, which amply explains the gravity of the gas phlegmon process. Even deep incisions into the region bring no blood; this is more characteristic of anaerobic infection than the production of gas. As long as anaerobes are limited to this region there are no general symptoms except the fever. But when they break into the circulation, the respiration becomes like that of diabetic coma, the blood pressure declines, the body grows cold, and death follows from gradual failing of the heart. During this phase bacteriologic tests of the blood always gave positive findings. Necropsy a few minutes after death showed the heart and coronaries full of bubbles, and in some cases the liver, kidneys and spleen were foamy—all, he thinks, the result of the production of carbon dioxid in the blood vessels. Some cases are described in detail. Pribram reiterating that there are scarcely any other bacteria against which we are so powerless as anaerobics when they have an opportunity to localize in broad masses of muscles. He adds that possibly serology may yet provide us with a weapon against them.

Wiener klinische Wochenschrift, Vienna

XXVIII, No. 36, pp. 965-992

92 Peculiar Features of War Typhoid. G. Herrnheiser.
93 *Nephrotyphoid. F. Deutsch.
94 Reaction Disturbances after Inoculation against Typhoid. M. Löwy.
95 Alimentary Toxic Polyneuritis in Mother and Daughter. G. Bikeles.
96 *Test for Urobilin in Urine and Stool. A. Edelmann.
97 Suggested Chart for Record of Action of Therapeutic Measures to Permit Comparison Better. (Vorschläge zu einer geregelten Heilstatistik.) O. Klaus.

No. 37, pp. 993-1020

98 *Motility Test for Typhoid Bacilli in Water. M. V. Carbonell.
99 Treatment of False Aneurysms. Zahradnicky.
100 Anise Oil in Treatment of Scabies. A. Perutz.

No. 38, pp. 1021-1048

101 *Detection of Tendency to Epilepsy. S. Jellinek.
102 Wounds of the Skull. (Erfolge und Misserfolge bei der operativen Behandlung der Schädelschusse.) B. O. Pribram. (Ueber Schädelschüsse.) M. Maresch.
103 Charcoal in Sterilization of Fluids. R. Kraus and B. Barbara.
104 Sources of Error in Bacteriologic Diagnosis of Dysentery. H. Egvedi and W. Kulka.
105 Gas Phlegmons. M. Cernic.
106 Inoculation of Army against Typhoid. K. Russ. Commenced in No. 37.

93. **Typhoid Nephritis.**—Deutsch relates that three persons in one house developed in turn acute nephritis with high fever. It proved to be the only local manifestation of typhoid fever. Typhoid bacilli were found numerous in the urine in one case the fourth day and also in the blood. The bacilli in all the cases were persistently serum-proof, not clumping at 1:50. The patients were children; the intervals between the cases were eleven and four weeks.

96. **Test for Urobilin in Urine and Stool.**—Edelmann's test is a modification of Schmidt's test for feces, which is based on the red pigment formed when dissolved feces are treated with a concentrated aqueous solution of mercuric chlorid. By using an alcoholic solution, he states, the reaction is much more pronounced. One of the two reagents is a 10 per cent. alcohol solution of mercuric chlorid. The other reagent is a 10 per cent. alcoholic solution of zinc chlorid and amylic alcohol. Only one or two minutes are required for the test, and its simplicity adapts it, he reiterates, for bedside use.

98. **Motility Test for Differentiating Typhoid Bacilli in Water.**—THE JOURNAL described Sept. 4, 1915, p. 908, the U tube, with sand in one side, through which motile bacteria readily make their way. The nonmotile stay in the sandless side in which they were all placed originally, while the motile typhoid bacilli make their way through the sand and proliferate above it.

101. **Detection of Tendency to Epilepsy.**—Jellinek lists the points which differentiate a true epileptic seizure from a hysteric spasm. Among them he notes that in true epilepsy the face muscles twitch predominantly while in hysteria the muscles of the trunk or limbs are most affected. With epilepsy the spasmodic movements are synchronous on one side of the body. In hysteria it is the whole of the upper part of the body or the legs alone that are mainly affected. After an epileptic seizure the individual feels prostrated and takes long to recover, while recuperation is rapid and complete after a hysteric attack. He adds that the Babinski toe sign, plantar flexion of the big toe, seems to be a reliable sign of true epilepsy. He found it constant in all his cases of epilepsy while the sign could never be elicited in any of his numerous hysteria cases.

Zeitschrift für Tuberkulose, Berlin

September, XXIV, No. 5, pp. 321-400. Last indexed Oct. 9, p. 1315

107 *Origin of Tuberculous Apical Lesions. (Betrachtungen über die Entstehung der tuberkulösen Lungenspitzenphthise. V.) C. Hart.
108 *Tuberculosis in the Active Army. (Die Tuberkulose im Heere zur Zeit des Krieges.) G. Schröder.

109 *The War and Pulmonary Tuberculosis. (Krieg und Lungentuberkulose.) H. Grau.
110 Tuberculosis in the Prisoners of War. (Die Tuberkulose der Kriegsgefangenen.) G. Liebe.

107. **Factors Leading to Apical Tuberculosis.**—Hart reviews much of the literature on this subject in this fifth article of the series. His own view is that a constitutional predisposition is the most important factor that determines the direction of the individual's fate so far as tuberculosis is concerned. The mode of life, the environment, unhygienic conditions in general breed tuberculosis only as they develop a latent into a well defined predisposition. Bacmeister contends that in children a localized and healed tuberculous focus in the lung might deform the upper aperture by muscular contraction in Pottenger's sense. Hart rejoins to this *Man soll nicht päpstlicher als der Papst sein.* Pottenger's theory presupposes a primary apical process, and this, we all know, is a great rarity in children, while in adults deformity of the aperture precedes the development of the tuberculous apical process. Hart insists that conclusions drawn from experiments on dogs cannot be applied to man. He has devised a method for experiments on monkeys which he thinks seems very promising, and he has not given up the hope that some day he may have the means to undertake research in this line. He is convinced that tubercle bacilli can exist as saprophytes in the lungs, or, as Liebreich expresses it, as nosoparasites. There may be functional, secondarily acquired and congenital factors cooperating, mechanically inducing a predisposition in the apex region for defective circulation of blood and lymph, thus providing conditions favoring localization of tubercle bacilli.

108. **Tuberculosis in the Active Army.**—Schröder remarks that the war conditions are like a laboratory experiment on a vast scale to decide certain questions as to the etiology of tuberculosis. The importance of a constitutional predisposition is exemplified again and again in the men who develop tuberculosis in active service. They all had had some tuberculous process early in life, but it had healed in time and the men were sound to all intents and purposes. Then came the war, with its tremendous demands on heart and mind, physical deprivations, powerful emotional stress, and inadequate or defectively cooked food, colds, etc. These factors are liable to rouse the latent, practically healed old foci and fan them to a flame, or start new endogenous foci elsewhere, the physical exertions of active service whipping up the circulation of blood and lymph and aiding in disseminating the germs. He knows to date of no instance of tuberculous processes developing in bones or joints in connection with external injuries, but these injuries, by lowering the resisting powers, favor metastasis.

All these factors act more potently in case of constitutional physical inferiority. On the other hand, the out-of-door life, muscular exercise and strengthening of the will power aid in combating the action of the invading germs so that in many cases the old latent foci remain latent, and the number of men developing active tuberculosis is less than might be expected. At the same time, early recognition of the flaring up of the old process and a prompt course of sanatorium treatment arrest the autoreinfection in many cases, so that there is every prospect that a not inconsiderable number of the men can be restored to the army in time. The main thing, therefore, is to distinguish between active and inactive cases, that is, those not requiring treatment. He outlines the examination necessary to determine this, including the minute inspection of all the organs, weighing the previous history, and signs of constitutional inferiority, unstable pulse, anemic heart murmurs and weak heart action, examination of the upper air passages and ears, taking the mouth temperature morning and afternoon every two hours and the temperature in the rectum before an hour's walk, after it, and again after half an hour of repose. The subcutaneous tuberculin test is not a reliable criterion as to whether a focus is active or latent, while he has seen harm result from it. The skin test is decisive for the diagnosis only when it is negative, but it may aid in the prognosis as a pronounced response to the graduated titration test, in the absence of signs of active tuberculosis, indicates a favorable prognosis. He says of tuberculin treatment that artificial production of "anergy" by no means signifies a cure of the tuberculosis, an acquiring of immunity, but rather the reverse. Individuals thus artificially rendered tuberculin-proof seemed more inclined to relapses than those not taking tuberculin. The proportion of soldiers recovering clinical health after a course of sanatorium treatment is larger than among civilians. At the Schömberg sanatorium only 3.4 per cent. of the 200 died or were dismissed as incapable of further military service.

109. **The War and Pulmonary Tuberculosis.**—Grau gives his impressions from observation of 100 tuberculous men at the Rheinland sanatorium. In two cases the men were unusually well developed but there was a suspicion of tuberculosis in the history, and after a period of exhausting overexertion both developed a febrile tuberculous process in the costal periosteum. The local process has persisted unmodified during the six months since, with occasional febrile periods. In some other cases, the inoculation against typhoid seemed to rouse a sleeping tuberculous focus, with prolonged fever afterward. In these and the rib cases the specific resisting power of the organism seems to have been unfavorably modified. A number of other interesting cases are described, the war affording typical examples of the numerous different causes that are liable to induce tuberculosis.

Pediatria, Naples

October, XXIII, No. 10, pp. 689-752

111 Connection between Rachitis and Inherited Syphilis. (Sul cosidetto "rachitismo sifilitico.) S. Mura.
112 Streptothrix Cerebrospinal Meningitis in Six-Months Infant. G. Rutelli.

Policlinico, Rome

October 10, XXII, No. 41, pp. 1365-1400

113 The Soldier's Ration. (L'alimentazione del soldato.) G. Dragotti.

October 17, No. 42, pp. 1401-1436

114 Lesions of the Nose and Accessory Cavities in War. G. Ferreri. Commenced in No. 40.
115 *Revulsion with the Actual Cautery in Treatment of Inflammatory Tuberculous Processes. (Le punte di fuoco nella terapia delle cosi dette tubercolosi inflammatorie.) A. Maffi.
116 Artificially Induced Lesions and Workmen's Compensation. (Le lesioni artificiali negli infortuni sul lavoro.) S. Diez.

October, Surgical Section, No. 10, pp. 463-500

117 Treatment of Gunshot Wounds of the Shoulder. (2 casi di ferite di arma da fuoco a pallini della spalla.) O. Cignozzi.
118 *Effectual Biochemical Action of Copper Sulphate in Treatment of Uterine Cancer. (Cancro dell' utero guarito col solfato di rame.) L. Manara.
119 Deviation of Complement Test in Echinococcus Disease in Man. L. C. Zapelloni. To be continued.
120 Mixed Tumors of the Palate. G. Morone. To be continued.

115. **The Actual Cautery in Revulsion Treatment of Inflammatory Processes.**—Maffi states that laymen in his country have an exalted opinion of the efficacy of revulsion with the actual cautery applied at numerous points over and around a long continued inflammatory process. This is also a favorite therapeutic measure of French physicians, especially in country practice. In a recent case of a tuberculous process in the knee, after failure of other measures, he yielded to the patient's insistence and applied the actual cautery at fifty points to encircle the knee. The spontaneous pain subsided at once; in forty days the patient was able to get up and in another month to walk without pain or further impairment of function. Encouraged by this experience, he has applied the measure since in all forms of what Poncet calls inflammatory tuberculosis, joint troubles, ostitis, neuralgia, synovitis, etc., and has obtained surprising effects, he relates, with revulsion in this way as an adjuvant to repose, fresh air and sunlight. He uses the ordinary thermocautery, with a blunt point, about 4 or 5 mm., and plunges it into the derma, sometimes to a depth of 1 cm. as in a case of sciatica rebellious to all other measures. After cauterization in this way at 100 different points on the buttocks and rear of the thigh, the neuralgia subsided promptly and permanently. After the cauterization he applies gauze with a little borated petrolatum. Change to a country life is always the surest means to cure in all such cases. He reiterates that this

form of revulsion with the actual cautery is always harmless and was borne perfectly even by his most sensitive patients.

118. **Copper Sulphate in Treatment of Cancer.**—Manara gives a number of views of the microscopic findings in a case of cancer of the cervix in a woman of 49. They show the varying aspect of the pus and scrapings from the cancer during a course of copper sulphate treatment, with final cure and no signs of recurrence during the months that have elapsed since. The woman had refused an operation and treatment was merely a daily intramuscular injection in the buttocks of a 1 per cent. solution of ammoniacal copper sulphate in distilled water. He relates that the glycogen in the neoplasm transforms the copper sulphate reaching it, into copper oxid. Under the caustic action of this copper oxid the cancer tissues swell and break down into an amorphous mass. This arrests the growth of the cancer which thus becomes transformed into an afebrile, mild inflammatory process which gradually heals. The course of these changes can be traced in the microscopic findings reproduced in the typical cases reported, all of which confirms his previous announcements on the subject. Cancer elsewhere than in the uterus is less protected against injury from without or from digestive juices, etc., so to date he commends the copper sulphate treatment only for uterine cancers.

Riforma Medica, Naples

October 9, XXXI, No. 41, pp. 1121-1148

121 *Successful Use of Quinin in Mild Protracted Fevers. (La cura chininica delle febbricole.) G. Rummo and L. Ferrannini.
122 Congenital Hernia of the Diaphragm. C. Volpe.
123 Pneumococcus Empyema and Peritonitis. L. Della Valle.

121. **Quinin in Chronic Mild Fever.**—Rummo and Ferrannini refer to cases that seem to be common in Italy in which the temperature runs up a trifle above normal at some time in the day, and this keeps up for weeks or months. When tuberculosis and syphilis can be excluded, they have found that a large dose of quinin by the mouth for a ten-day period restores the temperature permanently to normal in 80 or 90 per cent. of the cases. There does not seem to be any specific effect from the quinin but merely an antiseptic and antitoxic influence on the blood, which exerts an unfavorable action on all micro-organisms with which it comes in contact. Test tube experiments confirm the inhibiting influence of quinin on development of the colon and paratyphoid bacilli and others. A few typical instances of what they call "*febbricole*" are described showing the effectual action of the quinin, with a few refractory cases. Among the latter are two women who have had abnormally high temperature during part of the day, as a rule, for eight or nine years. Serologic tests have been constantly negative and several courses of quinin have not modified the temperature in any way. The daily dose is 1 or 1.5 gm., fractioned, taken while the temperature is at its lowest range. If one course is not effectual, they repeat it after a pause of four or five days. If three of these courses fail they accept the case as refractory and cease to push the quinin. The functioning of the kidneys and liver must be carefully supervised throughout.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

September 25, II, No. 13, pp. 1559-1646

124 *Research on Phagocytosis Suggests an Explanation of Certain Features of Chloroform Anesthesia. (Verklaring van het excitatiestadium der chloroformnarcose in verband met onderzoekingen over phagocytose.) H. J. Hamburger.
125 *Conjunctivitis Probably Part of Clinical Picture of Foot-and-Mouth Disease in Young Man. (Een geval van mond- en klauwzeer met oogverschijnselen?) L. A. Faber, Jr.

October 2, No. 14, pp. 1647-1726

126 *Importance for Diagnosis and Prognosis of Retention of Nitrogen in Chronic Nephritis. (Over stikstofretentie bij chronische nephritis.) R. R. Rochat and M. Hijmans.
127 *Clinical Importance of the "Urea Index" in Chronic Kidney Disease. (De klinische waarde van de onderzoekingsmethoden volgens Widal-Ambard bij chronisch nierlijden.) D. Klinkert. Commenced in No. 13.
128 Disturbance in Executing Volitional Movements. (Over sommige stoornissen in de uitvoering van eenvoudige, willekeurige bewegingen.) W. Van Woerkom. Commenced in No. 12.
129 Mucilaginous Seeds to Combat Constipation, especially Plantain Seeds. (Het zaad von plantago major als afvoermiddel.) H. and J. Pinkhof.
130 Recurrence of Quartan Malarial Fever after Intermission of Forty-Two Years. I. van der Heiden.

124. **Factors Causing Agitation Phase in Chloroform Anesthesia.**—Hamburger has been studying the process of phagocytosis as influenced by drugs. He mixed fine charcoal or sawdust with leukocytes in salt solution and counted the number of leukocytes that had incorporated the foreign particles, counting them before and again after a drug had been added to the suspension of leukocytes. In this simple way he was able to sift out the drugs that promoted from those that depressed phagocytosis. Minute quantities of calcium always augmented phagocytosis, suggesting the use of calcium in treating wounds. Iodoform has a similar influence, but iodin checks phagocytosis abruptly. Iodoform and likewise chloroform and all other substances tested which dissolve fats, lipoid substances, all have a pronounced accelerating influence on phagocytosis when in very dilute solutions. The results of recent research indicate that the outer layer of certain cells consists of a lipoid substance. As the drugs of this class, including chloroform and benzol, dissolve this lipoid coating, the ameboid movements are facilitated, and phagocytosis is thus promoted. When the drug in question is in a stronger solution, then it does more than merely dissolve the outer coating of the cell; it gets inside and acts on the body of the cell, paralyzing it, and hence all ameboid movements cease, and phagocytosis is completely arrested.

Hamburger tested further whether the presence of oxygen had an influence on these phenomena, and found to his surprise that phagocytosis was most pronounced the less oxygen present. Study of this phenomenon revealed its close analogy with the behavior of the functioning of the respiration center. The latter is stimulated by carbon dioxid and depressed by oxygen. When respiration is impeded, the oxygen content of the blood becomes low and thus also the amount of oxygen reaching the respiration center; the latter under the influence of this becomes stimulated above the normal conditions. The circumstances are thus like the acceleration of phagocytosis, and in both conditions, the stimulation carried too far forces the cell and the respiration center to excessive functioning, which leads to paralysis in time—the respiration center ceasing to work. The functioning of the respiration is thus shown to be not a special phenomenon, but a general property common to all nerve cells.

It is possible that the vomiting center might be influenced by inhalation of oxygen; deep breathing alone might bring sufficient oxygen to depress the functioning of the vomiting center and thus arrest the tendency to vomit. Experiments with potassium cyanid showed that this also stimulates both the respiration center and phagocytosis, probably because it prevents them from getting the oxygen present, and thus acts like deprival of oxygen by other means. Carbon dioxid also affects the respiration and phagocytosis in the same way, first stimulating and then forcing the stimulation to excess and consequent paralysis. It is possible that this may explain in part the benefit from Bier's stasis hyperemia. The higher nerve centers probably feel the effects of deprivation of oxygen, the same as other cells, and they are thus stimulated to extra functioning when oxygen is shut off. This is what happens when chloroform is given. When the patient has inhaled a little, at the very beginning of the anesthetization, the small amount of chloroform thus taken checks the gas interchanges, thus shuts off the oxygen supply to the brain cells, and they are stimulated to extra functioning. This is manifested clinically by the phase of agitation. Then the overstimulation brings paralysis, and we say the anesthesia is complete. In conclusion, Hamburger describes what he calls "endochemotaxis," which explains the mechanism of ameboid movements in general.

125. **Foot-and-Mouth Disease in Man Involving the Eyes.**—The young man applied for treatment because vision had become impaired in the last twenty-four hours, and there was a feeling of oppression over the eyes. Otherwise he felt well, but vision was 1:100 and 1:60 in the right and left eyes, respectively. The fundus seemed normal the first

day, but the next day showed some congestion in the retinal vessels. Glasses brought no improvement in vision. The ophthalmologist ascribed the disturbances to the fact that the young man had been doing some work with a benzin flame. Fever and a chill developed the day after the disturbance in vision was noted, and during the following week lesions developed in the mouth and on the soles suggesting foot-and-mouth disease, as also on the genital organs. There was no fever after the first day, but conjunctivitis and iritis developed, and by the twenty-third day vision was still only 1:3, and embolic foci were evident in the fundus; no leukocytosis, no eosinophilia, no Wassermann reaction. The mouth lesions had not entirely retrogressed and there was still some conjunctivitis the fourth week. By the end of the second month, vision was normal and there were no further symptoms. The only trace of the trouble left was a slight tendency to night blindness. Some cases of foot-and-mouth disease in cattle were known in the district. The young man never drank raw milk but, being a coppersmith, he mended milk cans. Others have reported involvement of the genital region in foot-and-mouth disease, but Faber knows of no case on record with involvement of the eyes, and he is not positive as to whether this was the correct diagnosis in his case. The blisters burst and ulcerated. The lesions on the feet and hands were all below the ankle and wrist.

126. **Retention of Nitrogen in Chronic Nephritis.**—Rochat and Hijmans have been investigating the urea content of the blood in 110 persons with healthy kidneys, as they describe in detail. The range was from 0.117 to 0.667. Computed by Ambard's formula, the range in 112 persons was below 0.09. Accepting 1.00 as the standard in health, not one of the healthy subjects surpassed this, while the patients with chronic kidney disease always gave a much higher figure, and the increasing urea content was always paralleled by aggravation of the clinical symptoms. The discovery of a high urea content often cleared up a puzzling diagnosis, before any definite symptoms of uremia became apparent. A number of experiences are related, all confirming the simplicity and reliability of the Ambard formula for sifting out the cases of kidney disease with retention of salt. This gives the clue to treatment and saves inflicting useless restrictions on the patients. With retention of nitrogen, of course, nitrogenous food should be restricted and the calories supplied in other ways. He lists for comparison some of the more common foods showing that 100 gm. each of sugar and butter represent 400 and 786 calories with no albumin; 100 gm. rice and bread, 253 and 235 calories with 7 gm. albumin; while 299 gm. potatoes represent 276 calories with 6 gm. albumin; 200 gm. green vegetables, 6 calories with 5 gm. albumin; 50 gm. meat, on the other hand, has 10 gm. albumin to 66 calories. Ambard's formula and the bases for it have been described in THE JOURNAL; one communication on the subject was published March 7, 1914, p. 813.

127. **The Ambard Formula in Chronic Kidney Disease.**—Klinkert reports fourteen cases of chronic nephritis in which the course was traced with Ambard's formula (see preceding abstract). Three of the patients were men of 24 or 30 with albuminuria, but the Ambard formula showed constantly normal figures for the urea index, and the course of the cases confirmed the assumption that there was merely a tendency to orthostatic albuminuria. When a normal Ambard index is confirmed by a normal response to the test ingestion of 20 mg. urea on a test diet, the suspicion of chronic kidney disease, even in its earliest incipiency, is rendered untenable. In three other cases the Ambard formula warned of impending danger and by dietetic restrictions based thereon the danger was averted, the headaches cured and the Ambard index brought to normal.

The value of the blood-urea index seems to be confirmed anew by the fifteen cases related. There is retention of nitrogen in all forms of uremia, and although the patient may seem not to be incommoded by it, yet his life hangs by a thread unless the diet is regulated to keep down the nitrogen to a low point and thus leave little to be retained. The urea content of the blood is thus reduced and the patient's symptoms improve as a rule, but not invariably. Uremic poisoning is not a simple quantitative retention; it is probably above all a qualitative dyscrasia. How otherwise, he remarks, can we explain the polyuria, pruritus, etc., liable to develop before, with our best tests, we are able to detect any quantitative increase of the urea content. The retina mirrors the true condition and especially the improvement on an appropriate diet. This can be counted on most regularly in cases with not over 1.5 gm. urea. In all cases, however, he urges that the restriction of albumin must not be too rigid as this is liable to do more harm than good. By taking into consideration the general physical and psychic condition, along with the Ambard index, he thinks that it will be found an important aid in guidance of the different cases. It at least gives us a railing to hold by where, till now, we have been groping in the dark.

Hospitalstidende, Copenhagen

October 6, LVIII, No. 40, pp. 1015-1046

131 *Achylia and Anemia with Chronic Polyarthritis. G. V. T. Borries.
132 Interchanges in Air in Human Lungs. (Om Blanding af Luft i Menneskets Lunger. Forsøg og Kritik.) A. Krogh and J. Lindhard.

October 13, No. 41, pp. 1047-1074

133 *Treatment of Postoperative Parotitis. S. Muller.
134 Atypical Form of Paroxysmal Hemoglobinuria. (Tilfælde af Marchhæmoglobinuri.) A. Sabroe.

131. **Achylia and Anemia with Chronic Polyarthritis.**—Borries quotes from recent textbooks which state that the internal organs almost always functionate normally with chronic joint disease. Appetite and digestion keep good, except for the frequent tendency to habitual constipation. This statement is the more remarkable, he says, because fully six years before Mering's 1913 manual, and even before Strümpel's were published, Faber and Lange had published four cases of achylia with chronic polyarthritis, and later had encountered it in 50 per cent. of 28 cases, and in 23 per cent. of a still later series of 65 cases (1913). Anemia was evident in 9 per cent. Borries' experiences confirm this frequency of disturbance in stomach functioning and blood production, as he relates in detail. In chronic polyarthritis (gonorrheal or syphilitic origin excluded) in 84 patients under 50, achylia was pronounced in 30 per cent. Including the 21 patients between 50 and 60, the proportion was 37 per cent. These figures become more significant when it is learned that the achylia was found in 15 per cent. of the 40 cases in which the joint trouble was of less than two years' duration; in 33 per cent. of the 39 of up to eight years' duration, and in 60 per cent. of the 15 of from eight to thirty years' duration. Achylia thus was evident in 30 per cent. of the total 94 cases. Anemia was evident in about 20 per cent.; it is secondary but may reach high proportions.

133. **Postoperative Parotitis.**—Eleven cases are described by Müller who emphasizes the necessity for evacuating massage if pus is found in Stenson's duct, as this indicates an ascending affection. If no pus emerges from Stenson's duct on light pressure of the parotid gland and its outlet, massage is contra-indicated—there being then no reason to suspect metastatic parotitis. In one such case the primary trouble was in the scapula and the parotid swelled but no pus could be expressed. Finally, after four days, pus emerged but the patient then was practically moribund from pyemia. The duration of the parotitis in the other cases treated with massage was from three to eleven days, and no phlegmon developed in any instance. In the 5 cases in which massage had not been applied, a phlegmon developed in two, and the process lasted over three weeks in 2, for eighteen days on the right and fifteen days on the left side in one case, but in another case the whole trouble subsided harmlessly in five days under moist heat.

Ugeskrift for Læger, Copenhagen

October 7, LXXVII, No. 40, pp. 1571-1598

135 Roentgen Treatment of Metrorrhagia and Fibroma; Sixty Cases. H. J. Panner and S. Kjærgaard.

October 14, No. 41, pp. 1599-1638

136 Striking Benefit in Pernicious Anemia under Kefir. (Om Anvendelsen af Kefir ved Anæmia perniciosa.) S. Kemp.

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MAGIC AND MEDICINE*

FRANCIS CARTER WOOD, M.D.

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It is a pleasant academic custom, established of late years in this school, that the incoming students shall be welcomed, not only by the president of the university, but also by a member of the faculty, through the medium of an address, fortunately somewhat delimited as to time, usually devoted to some general aspect of medical practice or to some phase of the contributary sciences. This year the honor has fallen upon me, and I purpose to use the opportunity to call your attention to an important aspect of human psychology which has existed as long as the human race itself—was, indeed, fully developed before medicine as such was divorced from religion—but now remains chiefly as one of the subconscious vestiges of the mind—a spiritual remnant, quite as in the body we still find vestiges of the gill-slits inherited from our far-distant ancestors who swam about in some primeval sea. And just as these branchial clefts and arches remind us of our lowly anatomic origin, so, also, do the mystical yearnings of the mind point back to a period when the cave-man looked out upon a world full of terrifying portents, which, his spiritual advisers, after proper incantations, warned him could be overcome only by suitable offerings to the gods.

An examination of the relations between magic and medicine during that early period, although of great anthropologic interest, we must of necessity pass over, turning instead to our own day, to this complex and puzzling age which we so fondly think is governed by the cold light of reason, and in so doing we must, to paraphrase Spinoza, be most careful not to laugh at the actions of mankind, not to groan over them, not to be angry with them, but to try to understand them.

A full century has passed since Waterloo marked the freedom of Europe from the militaristic domination of Napoleon, and offered to man that liberty of thought and action which was acclaimed by all but a few reactionaries as enabling each to accomplish what had before seemed impossible: the releasing of all individual energies for moral, social and scientific achievement. And what has not that century of supreme and united effort brought forth! Today we boast such freedom for the soul that no one knows quite what to believe, and so believes that which he prefers; so definite and final a code for moral action that the minds of the people of this country oscillate between peace at any price and war at any cost; such widespread brotherly love that never since the world began have in one short year so many men fought face to face and laid down their lives with unimaginable heroism for what they thought a duty. Never have the benefits of human culture and efficiency been so perfectly demonstrated on a recalcitrant world by bayonet thrusts and shrapnel. The marvelous developments of chemistry are far less clearly shown in the synthesis of useful dyes and healing drugs than in the ability conferred on mankind to destroy his fellow creatures by suffocating gases or by liquid fire of such exquisite potency as to make death from that used by the somewhat illiterate and incompetent Greeks almost a pleasure, and to cause Torquemada to blush with envy.

Nor have we been willing to confine the blessings of this modern civilization, born of the new freedom, to our own people, but have generously, and occasionally forcibly, conferred them upon other and more benighted races, so that today no Chinaman need suffer for lack of opium, no South Sea Islander be denied his alcohol and syphilis, no Indian but can enjoy, with some slight restrictions, the commingled benefits of whisky and tuberculosis.

With such a record can any one deny that the human race is approaching spiritual perfection? Has not our own country set the pace? Have we not more universities than any other, even though certain safely endowed cynics *do* call attention to the annoying fact that some institutions still confer their Ph.D. degrees *in absentia*, after only a moderate amount of correspondence and the receipt of a small fee? Have we not more popular, if somewhat superficial, education than any other country in the world? Do we not show the wonderful results of civilization in that we manufacture more pig iron, mine more coal, send more telephone messages, consume more "patent medicines," than any other?

In response to this revaluation of all values, medicine too has risen from its humble beginnings in priestly incantations, to a point where its leaders declare it to be a science and no longer simply an art. Today we smile at the cautery and boiling oil of a surgery of bygone ages, for now the burns of radium and Roentgen rays, in virtue of their magic qualities, have, as Sganarelle has said, "changed all that." The mere mention of the prescriptions of a Malay magician, embracing scorched cat's whiskers and other equally valuable remedies, brings a smile to the face of the recent hospital graduate who prescribes from a sample package of the latest synthetic drug from Germany, just left at his door by the postman and proved to be of the highest value, because, first, the

* An address delivered at the opening of the College of Physicians and Surgeons, Columbia University, New York, Sept. 29, 1915.

advertisements says so, and, second, it has been tested on ten dogs and twenty rabbits—a much more scientific method than trying it on man. The fortunate patient also escapes the bad tasting mixtures of his childhood and knows that his physician is progressive and ahead of the times, since no article commending the drug has as yet appeared in the monthly magazines.

What country lad, suffering from that digestive remorse which so often follows an assault on a neighbor's apple tree, but would appreciate the modern improvement over castor oil and minted ginger, to be found in psychotherapy or even the Emmanuel movement, or, if willing to stray from the straight and narrow path of regularity, would not prefer absent treatment from a Christian Scientist or manipulation by an osteopath?

What pious spinster but would acknowledge the glories of modern therapeutic achievement in the discovery which enables her to enjoy in the innocuous form of a widely advertised tonic her daily or thrice daily cocktail, and still remain a zealous and esteemed member of the W. C. T. U.?

From these serene heights of scientific medicine we can well afford to treat with contempt such unfortunate aphorisms as that attributed to the greatest of medical comedians: "The only thing the matter with the quacks is that they cure so many people," and to regard with satisfaction the ominous gloom which has suddenly snuffed out the literary light who composed that libel on the medical profession, "The Doctor's Dilemma."

Yet sometimes this wonderful science of medicine does not seem to be a wholly satisfactory guide. You, as future practitioners of medicine, have still before you the pleasure of dismissal from the care of some small patient on whom you have spent all the scientific acumen with which your teachers will endow you in the next four years, because in grandmother's day it was not necessary to make such a fuss about baby's milk. "All of her children, and she brought up ten, took milk straight from the cow, and nobody ever thought of modifying it." And when after you have in desperation told the mother of the next small hopeful that it will be enough just to put a little lime water in the bottle, and have been promptly displaced by Dr. Blank, who is "so much more intelligent because he knows exactly how many calories each bottle contains," it will be small comfort that you are perfectly well aware of the fact that Dr. Blank never heard of a calory until a few weeks before, and thinks it means something about germs. When you have been replaced because you listened to grandmother's chest with your ear, showing that you knew nothing of modern medicine, or supplanted because you did use the offending instrument, showing that you must have bad hearing and really could not know that she had pneumonia from your knowledge of her constitution; when, as I say, all these things have happened, you may begin to wonder whether there is not some defect in your medical education. Then, when you see the street in front of the house of Dr. Blank, whose medical standing is questionable, but of whose financial ability there is no doubt, filled with the automobiles of the rich who are taking the latest sure cure for cancer or tuberculosis or having their souls analyzed by the newest method, which "feels just like the confessional and reveals such awful things in one's past, but must be all right because there was a long article about it in the September *Century Magazine*," it will be slowly borne in upon you that there must be some things not taught in the curriculum.

And what is the foundation for all this lack of appreciation of the last word of medical science? We must apply a sort of freudian analysis to the collective mind of the community, and in so doing it is extremely important that we remember the changed conditions of thinking which have come over medicine, for to these is due some of the present condemnation of the profession. In the older days all possible facts on which to base a diagnosis were obtained by talking with the patient or his family, and by making a simple—usually a very simple—examination of such portions of his body as were visible without removing more clothing than was conventionally considered to be within the limits of modesty. The discussion of such facts between a physician and a consultant, and even the mental processes by which the diagnosis was reached, bore largely on matters with which the patient and his family were familiar, and the only way in which the practitioner could gain the desired effect of great wisdom was by concealing his method of reasoning and the nature of the medicine prescribed. The more ignorant he was, the more obscure were both. Hence, the further back we go in the history of the art of medicine, the more mystical the methods of diagnosis, the more complex and fanciful the drugs.

Nowadays, no attempt is made by the intellectually honest physician to obscure the methods of diagnosis, or the results of the scientific reasoning, nor is there anything mystical in the treatment. We sift the testimony of the patient and his friends in the light of the known untrustworthiness of human evidence, and ask that a large portion of the diagnostic information be written records obtained often by chemical or biologic methods beyond the manipulative skill of the physician himself. The stress so often laid on such records has led the patient of today to feel that if he has access to them he can make as good a diagnosis as the physician. Indeed, it is not uncommon to have one of the modern, highly educated neurotics bring out a vast pile of analyses, sometimes so poorly done as to be of no value, lay them before the physician, proceed to inform the latter of the real condition from which he is suffering, and, then, if not flattered by instant approval, leave for some more amiable and perhaps more worldly healer, but ultimately to form the material on which the quack fattens his bank account.

Thus it is that a not inconsiderable portion of the community, especially those who have achieved success through their business ability, the while they glibly state that the physician is a fool in business, forget that the converse also may be true, and on the intellectual basis of a course in medicine obtained from the Sunday supplements of the daily press and a few popular magazine articles on the medical fads of the moment, pass judgment on the methods and results of medical art, which would be amusing if they were not so pitiful. For none of these men would for a moment consider the investment, even of other people's money, in a business scheme of which they had so little fundamental knowledge as they have of the medical subjects they airily discuss. The inevitable result of this superficiality in judgment, largely due, I believe, to the lack of thoroughness and mental discipline in our popular education is an underestimation of the real ability of the physician and an overemphasis on the practical

value of surgery, both temporary phases certain to be adjusted in the course of time.

And so we see as a consequence that in its search for something to satisfy its desire for magic, a something which the scientific physician no longer supplies, a portion of the public has turned in another direction which leads to Christian Science and osteopathy. Each of these is singularly adapted to fill a mind of a certain type: the first, because of its aura of religion; the second, through its appeal to the practical as "doing something." The era of indiscriminate pill-giving by the physician having passed, it is hard for a patient to surrender a considerable fee for mere advice — usually irritating because so evidently just; but a half hour's massage and manipulation have a real cash value, even if they do not cure all maladies. The practitioners of each of these trades are well endowed with that insight into human nature to which the physician is often indifferent, and know how to supply that suitable atmosphere of mystery for which so many still yearn.

Perhaps the public is not altogether at fault in its attitude toward some phases of medical practice, for an insidious form of higher quackery is not infrequently exhibited by a certain type of physician who through the use of a majestic array of instruments or reports of complicated chemical analyses, of the real import of which he is often ignorant, seeks to conceal his intellectual nebulosity and to impress his more desirable and wealthy patients with his scientific equipment, just as did the doctor of a generation past with a dusty microscope, never disturbed from beneath its bell-jar, or the quack of a still older period, so lovingly satirized by the Dutch artists, with his consultation room decorated with skulls and stuffed reptiles. An appeal to magic all of this, though the modern chaser of diagnostic ichthyosauri may not see the connection. Sometimes the patient does.

A remarkable example of crowd psychology, affecting both the medical profession and the lay public and showing the appeal of the occult, was seen in connection with the Friedmann tuberculosis cure a few years ago. The cure was exploited, apparently, by a syndicate which shielded itself behind the discoverer, who was probably perfectly honest in his belief that the bacterial cultures which he used had some value in the treatment of tuberculosis. In Germany the remedy met a cold reception, but in this country, owing to the great advertising value of the daily press, to the pseudoscientific way in which the whole question was ventilated, even before Dr. Friedmann's appearance in the United States, and to the opposition of the medical profession to the use of this secret remedy, considerable sympathy for Dr. Friedmann was aroused, even among the intelligent, and there resulted a rather bitter feeling toward the medical profession as jealously preventing the public from benefiting by a marvelous discovery — somewhat as today the attitude of a portion of the press on the subject of "twilight sleep" is that the physicians have banded together to defraud the people of something valuable. If the newspapers would only publish the facts behind all these affairs, the public would be quickly disillusioned; but cold facts are rarely of news value, and we must remember the retort of Charles A. Dana to a young reporter who approached him with a news item concerning a man who had been bitten by a mad dog. "That is no news," said Mr. Dana; "go out and find a mad dog that has been bitten by a man, and we will give you plenty of space for the story." It is the sensational which appeals to the mass, not necessarily the true. When once a sensation gets well under way, it is wonderful to see how it is reflected from one portion of the country to another, appearing again and again in more and more distorted form, until in the boiler plate page of the country weekly it finally loses all semblance to the original. Until we realize that the vast majority of the people of this country read nothing but the newspapers, and have few opportunities for obtaining accurate information by word of mouth from physicians or informed laymen, we will not understand how merely printed matter can have such great influence. The wildest newspaper statement is absolutely believed, and however shrewd the individuals may be, yet when gathered in a group or united by a common emotional topic they undergo that curious physical alteration which Voltaire, the first of the crowd psychologists, noted — their ears elongate. And what would be rejected as nonsense by the individual is accepted by the crowd, which is swayed by self-interest or self-pity, or that love of the mysterious bequeathed us by our cave-man ancestors.

Nor does the magic of a phrase stop at the crowd; it involves men of scientific training, and illustrates another aspect of mystery in the field of medicine. Let me read you a paragraph from the report of the hearing before the Committee on Mines and Mining of the House of Representatives of the Sixty-Third Congress, Jan. 19, 1914:

> Radium goes further than surgery. like the blessed light from heaven above, bathes the part, throws its gamma rays, which are its active rays, into the part, acting on all the myriad microscopic cells like millions of microscopic knives to destroy them or like a lash to drive them back. In other words, radium will not only do what surgery does, but it goes beyond it and takes a class of cases which are utterly beyond surgery. It has wonderful possibilities in chemistry and physics—marvelous possibilities. One cannot let oneself dream about it.

Of course this is emotionalism, not reality; but why does this man of education and culture speak in this way? What is there in this element radium which so warp's men's judgment that they tell only of successes and forget to mention the vastly greater number of failures to cure? First, there is its great rarity. The human race has always treasured things difficult to find or to make, even if of little intrinsic value. Then, in this new element, also, are centered a fascinating series of qualities, simple enough today to the physicist but still mystical to the public. Radium gives off heat; its atom explodes into a heavy metal and a gas which bombards the walls of the container; it gives off rays which will pass through a foot of lead and take a shadow photograph on the other side of this dense mass of metal; it will burn the tissues just as the Roentgen ray burns, somewhat less rapidly and less effectively than a red-hot piece of iron, but much more quietly and mysteriously, since the burn does not appear for a week or more. The writers of scientific papers even speak of the "magic power of radium," but magic only because we do not understand it; and when its physical qualities are fully understood we shall hear much less about the use of radium in the treatment of cancer. For in spite of all the statements made in the daily press about the wonderful cures which radium produces, we know today that it will certainly cure only a very small number of cancers

and will do nothing which cannot be done by surgery. The result of the furore and publicity is, however, that it is now not always possible to get patients to submit to surgery for the removal of a tumor; they are so anxious to be treated with radium. The farmer in the farthest New England hills, reading in his weekly paper that radium is a certain cure for all kinds of cancer, comes to town refusing operation which might save him, only to fall into the hands of the nearest quack who has a little powder in a tube.

Such is the power of the press, molding the uncritical opinions of the people in virtue of the mystical which it celebrates. This influence of the mystical affects us all. Do *you* refuse to open an umbrella in the house, or cross between the carriages of a passing funeral? Do *you* avoid going underneath a standing ladder, or knock on wood lest your boasting bring bad luck? Probably you do, not because you are superstitious, but because, as a witty friend of mine once said, when accused, he liked to be on the safe side.

And now we must pause, not for lack of further apt illustration, new examples of which will soon be furnished you from your own experience, but because the natural limitations of human attention must be respected, and drawing in the net, survey the catch, dealing leniently with the human frailties within. For are they not a part and parcel, obscure and stupid as they seem, of that yearning for a power and perfection beyond the mere limitations of the flesh, which has led men on for all time? Do they not represent a blind appeal to something superior and more permanent than human life itself, something not evident to the senses, too subtle for the balance of the physicist, not to be captured in the test tube of the chemist, capable of diversion to evil ends when exploited by the unscrupulous, of infinite power when used by the wise for spiritual development?

The remedy for the evils is simple enough — education. With the deepening of real knowledge comes intellectual charity, while a diminution in the sensationalism of the press and a corresponding increase in the clarity and honesty of such medical information as is suitable for the public, the really excellent educational campaigns now being conducted by physicians through the publications of medical societies and reports of public health officers, and the most effective propaganda of the American Medical Association and of certain publicists who have raised their voices against the widespread sale of quack medicines — all these will abate somewhat the density of popular ignorance. For it is our duty as physicians to lead in this intellectual reform by refusing to be limited by a narrow professionalism, both in education and in practice, and by entering more and more deeply into the life and problems of those for whom we care, to regain that position of intellectual leadership which some of our great predecessors held in virtue of the fact that they were, first of all, great men, and only secondly, accomplished practitioners of an ever-widening art. And it is with that suggestion that I welcome you to the study of the broadest of all professions, whose interests touch all sciences and to which nothing human is without value.

Laboratory and Clinical Examinations.—Not saving of time, or of thought, is the primary object of any diagnostic method of value, but the more complete and accurate knowledge of the patient's condition.—George Dock, *Journal of Laboratory and Clinical Medicine.*

HOSPITAL EFFICIENCY AS PRODUCED AND MEASURED BY A FOLLOW-UP SYSTEM *

ARTHUR A. HOWARD, M.D.
Clinical Instructor, Department of Pediatrics, Harvard Medical School; Physician-in-Chief, Children's Department, Boston Dispensary
BOSTON

In the medical world no less than in business, efficiency has become a recognized essential attribute. We have but little use—and rightly—for the hospital which is not efficient. But just what do we mean by hospital efficiency? The term suggests to our minds a capable administrative board, a staff of skilled physicians, good team work and organization, and adequate and up-to-date equipment.

These *are* essentials to hospital efficiency. It is because of such standards that in the minds of the general public the word "hospital" is no longer synonymous with impending death.

Standards are, however, but relative. They must be constantly changed and raised to accord with advancement in medical knowledge.

Modern medicine, twentieth century medicine, includes in its scope not only the cure of disease but also the prevention of illness.

The children's medical department of the Boston Dispensary includes a hospital for children of twenty-five beds and an outpatient clinic receiving over 14,000 visits a year. We have believed that, especially in dealing with children, the best results can be attained only by safeguarding the health of the patient after discharge, and have included in our responsibility the medical supervision of the child beyond the hospital or curative period. To undertake this plan intelligently, or indeed to make any plans for the child's health, it is necessary to know more about the child, especially in regard to home and living conditions, than can be learned from hospital histories and physical examination. The Boston Dispensary Hospital for Children has therefore adopted the plan of having a member of the social service staff visit the home of each patient admitted to the hospital. The home environment as regards location, hygienic conditions, social and economic circumstances is noted. This information is obtained with the spirit and attitude of planning for the interests of the sick child and not as a "third-degree" probing into family and personal matters. As soon as the visitor has the home situation well in mind, a bedside conference is obtained with the physician who has had charge of and has studied the medical condition of the patient. The information each has obtained is collectively considered. The physician makes immediate use of the information obtained by the visitor in planning the length of time it will probably be necessary to keep the patient in the hospital. This often makes a decided difference in the methods of treatment employed, and often aids the physician to understand better the clinical picture presented by the patient.

The physician and the visitor, having the home and medical conditions in mind, then plan the course to be followed on the discharge of the patient from the wards.

* Read before the Section on Hospitals at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

If the home conditions are suitable, and the family is in a position to employ its family physician to supervise the convalescence of the case, the responsibility of the hospital is ended after the visitor has seen that the child is actually placed under the family physician's care.

If the character of the case is such that long and close supervision is necessary, as for example a feeding case, and the patient lives at some distance from the dispensary, it may be referred to the nearest "milk station" or "well baby clinic." The physician and nurse at the station will then assume the responsibility for the baby's feeding, and the supervision of home conditions. In other instances, as, for example, chronic heart cases, if the home conditions, as regards hygiene, etc., are favorable, the district physician of the Boston Dispensary and the district nurse may be asked to cooperate and to provide continued medical and nursing supervision in the home. Other patients requiring continued institutional care may be referred to a suitable chronic or convalescent hospital.

In other instances, the visitor and the physician work out what seems to be the best plan for the child, utilizing existing agencies, such as child placing and child helping organizations, for this purpose when indicated. The visitor in each case sees that the arrangement is in actual operation before transferring her responsibility.

The majority of the discharged patients are referred to the children's outpatient department of the dispensary. When this is the plan adopted, the visitor, after studying the home problems and conferring with the physician in charge of the case while in the hospital, secures as far as possible suitable home conditions before the discharge of the patient from the hospital wards. After discharge, the visitor is responsible for the first visit of the patient to the outpatient department, the responsibility after admission there resting with the outpatient department's follow-up system.

The return and continued supervision of cases in the children's outpatient department of the dispensary is effectively secured by means of a visible file index, and follow-up visits by the social service department.

The visible file index makes obvious the failure of any patient to return on the date specified by the physician in charge of the case. A postal card is sent to the patients failing to return at the specified time, and if they then fail to return, the records of the cases are presented to the physician in charge, and he determines whether or not the condition of the patients justifies a visit to the home to insure their return or at least a report on the situation.

Good team work between the follow-up system of the outpatient department and that of the hospital is rendered easy, as home conditions of patients admitted to the hospital are in many instances already known to the social worker. All that is necessary in such cases is to carry out any new measures made necessary by the emergency of the acute illness and convalescence of the patient. Whatever the disposition of the case, each patient, as far as possible, is returned at three months and one year for medical inspection by the physician having charge of the case in the hospital.

The children's department of the Boston Dispensary introduced this plan of providing medical supervision and following up discharged hospital patients for several reasons. The number of babies and children readmitted to the hospital because of reinfection, failure to convalesce properly, and intercurrent disease was extremely suggestive. It was felt that it was a distinct loss in experience for the physician in charge of a hospital patient to terminate his knowledge of the case with the patient's discharge from the wards, with no opportunity to know of subsequent developments or end-results.

It seemed unfortunate that the patient should lose entirely the personal touch with the physician familiar with the course of the acute illness. It was felt that it would be of definite value if the patient could, whenever possible, benefit by a longer supervision and plan of treatment by the same physician.

From a purely economic as well as a medical point of view, it seemed poor business to call on the resources of the hospital for the care of a patient, and secure good results, only to have in a short time the hospital again burdened with the expense of more hospital care for the same patient. This pointed to a waste of effort and money that the efficiency man of any business would promptly criticize and attempt to remedy. The physical condition of readmitted patients, and the history of the case between discharge and readmission suggested that unfavorable home conditions and improper management of the patient was, in some instances at least, responsible for the readmission. This led to a study of the home conditions of patients admitted to the hospital in 1912. This study clearly indicated that the existence of unfavorable living conditions as indicated by clinical experience was a fact and not a mere theory. Investigation of the homes of all patients admitted to the hospital disclosed conditions unfavorable to convalescence or continued health in 94 per cent. of the cases. In other words, without the knowledge obtained by these home visits and the measures taken to improve the existing conditions, the dispensary would have discharged 94 per cent. of its patients into just the kind of environment that predisposes to readmission and unfavorable results.

This rather disquieting discovery suggested that even more valuable information might be obtained by determining the effectiveness of the measures taken to remedy these unfavorable conditions as judged by the physical condition of the patients at three months and one year after discharge from the hospital, at the same time checking up the findings of the previous study as regards the existence of unfavorable home conditions. Therefore, over a year ago, a system was adopted by which the condition of a child is ascertained and recorded, as a routine, three months and twelve months after discharge.[1]

From May 1, 1913, to April 30, 1914, 245 infants and children were discharged from the hospital. The illnesses responsible for the patients' stay in the hospital were about what one might expect. A brief summary is given in Table 1.

An investigation of the homes of these patients gave almost identically the same results obtained in the previous study. Of the 245 cases, 230 (93.8 per cent.) presented definite educational or home problems. A brief summary of these problems is given in Table 2.

These figures scarcely require discussion or interpretation. They speak for themselves. Whatever

1. The blank forms used for this work will be sent to any one interested, on request to the author, at the Boston Dispensary, 25 Bennet Street, Boston.

may be the conditions as regards other hospitals, the Boston Dispensary has a definite situation to meet. Although fundamentally social, the problem obviously at once becomes medical. The measures taken to remedy these unfavorable conditions must be based on medical knowledge of cause and effect. It becomes an individual problem with each patient, to determine, from the physical condition of the patient and the character of the home, what changes are necessary or desirable to secure a good medical result.

TABLE 1.—ILLNESSES OF PATIENTS

Medical Illnesses.	No.	
Gastro-intestinal	58	
Respiratory	41	
Cardiac	19	
Congenital syphilis	10	
Genito-urinary	6	
Central nervous system	6	
Meningitis	5	
Pulmonary tuberculosis	5	
Infantile paralysis	3	
Scattered medical diseases	21	
		174
Orthopedic	26	
Surgical	25	
Nose and throat	12	
Eye	5	
Ear	3	
		71
Total		245

TABLE 2.—EDUCATIONAL AND HOME PROBLEMS

1. Educational:		
Homes presenting educational problems (such as teaching care of child, hygiene, need of treatment of other illnesses in the home; need of further medical supervision of the child)		187
Homes not presenting educational problems		58
2. Family Problems:		
Homes presenting family problems		218
Such as:		
Acute poverty	29	
Bad home condition other than poverty	44	
Illness in home	43	
Inadequate care of child other than poverty and illness	23	
Illegitimacy	17	
Homes presenting no family problem		27
3. No educational or family problem		15

The positive findings in the case of the Boston Dispensary would indicate that other hospitals, even if more fortunate in the economic and social circumstances of their patients, can scarcely claim efficiency unless this phase of the patients' welfare receives attention.

The following data appear to demonstrate two points:

1. The conditions disclosed in the study of the children's home environment had a definite bearing on the progress made by the patients after leaving the hospital.

2. The control of the patients through the follow-up system and the social service department was a factor in producing this progress.

Of the 245 patients admitted to the hospital, the condition at discharge was: well, 60 (25 per cent.); improved, 122 (50 per cent.); not improved, 21 (9 per cent.); died, 42 (16 per cent.).

Three months after discharge the conditions were: well, 57 (23 per cent.); improved, 103 (42 per cent.); not improved, 14 (6 per cent.); no record, 17 (7 per cent.); died, 54, that is, 12 who were alive at discharge died within three months. Ten of these deaths were due to conditions known to be hopeless at time of discharge.

At one year after discharge the conditions were quite different, as will be seen from the following: well, 119 (49 per cent.); improved, 47 (18 per cent.); not improved, 18 (7 per cent.); no record, 1; died, 60, that is, 6 had died between three months and one year after discharge.

It is certainly a striking fact that fewer children were well three months after discharge from the hospital than were well at the time of discharge. The data point strikingly to the conclusion that the task of restoring and maintaining the health of the patient is far from completed on the discharge of the patient from the hospital ward. It is to be borne in mind that these patients were all children mostly from poor homes and that about half were babies. When this is taken into consideration, it is encouraging to note that of 203 patients discharged alive, only 18 died during the year after discharge, and 12 of these cases were known to be hopeless at the time of discharge. Only 6 deaths were the result of intercurrent disease or unexpectedly unfavorable convalescence from the hospital illness.

On the other hand it is highly encouraging to see the steady and substantial improvement as the year advances. Of 103 patients recorded at three months as "improved," 49 were well at the end of the year, 45 were further and much improved, and only 9 were not improved. Of 14 "not improved" at three months, 3 are well at the end of the year, 2 are improved, and 9 remain not improved. At the time of discharge, 25 per cent. were "well"; three months after discharge, only 24 per cent.; but one year after, 49 per cent.

The decidedly improved standing at one year over the relatively poor standing at three months suggests that medical supervision and the measures adopted to improve unfavorable home conditions are producing, if slowly, desirable results.

Ignorance may be bliss, but it certainly is not efficiency. We must face the situation. The Boston Dispensary already knew that conditions unfavorable to health existed in the majority of the homes of its patients. An organized systematized plan for remedying these conditions and medically supervising the patient after discharge was carried out. We know that home conditions were immeasurably improved. We know that as the result of following up the patients, intercurrent diseases were seen by the physician early and that unfavorable convalescences were given medical attention. We have tabulated our results. If these results in spite of our efforts are not as satisfactory as we might wish, we hesitate to hazard a conjecture as to what the results would have been had no effort been made to safeguard the health after discharge from the hospital. Knowing the facts, knowing the difficulties, knowing where we have fallen down, are the first steps toward formulating effective measures to combat these difficulties and secure better results.

More study and a more accurate knowledge of the deleterious influence of environment on the convalescence, in predisposing to intercurrent disease, in preventing normal development and health are extremely

desirable. How can we more readily secure this information and measure the results of our methods of remedying conditions unfavorable to health than by a follow-up system which includes the investigation of home conditions, the medical-social education of parents and medical supervision and periodic inspection? To be of real value, this system must apply to all cases, not to occasional or selected cases; it must be a continuous part of the hospital routine; and, finally it must not be merely a negative factor, finding out the patient's condition at periodical intervals after discharge, but a positive factor, exercising control over conditions. The cost of such a follow-up system adds only one tenth to our hospital budget.

Prevention is cheaper than cure. If we can by means of a follow-up system determine and measure our problems and secure results, this cost should be turned into actual saving to the hospital by decreasing the number of readmissions.

Does not our knowledge of preventive medicine and such clinical experience and statistical evidence as this study discloses indicate that a follow-up system to show problems and secure and determine results is an essential part of the equipment required to produce and measure hospital efficiency in its twentieth century interpretation?

THE EXPERIMENTAL TRANSPLANTATION OF THE EPIPHYSIS

WITH OBSERVATIONS ON THE LONGITUDINAL GROWTH OF BONE *

S. L. HAAS, M.D.
SAN FRANCISCO

No subject in bone surgery has been so extensively investigated during the last few years as has that concerning the transplantation of bone. As a consequence of these studies certain of the resulting changes that take place after transplantation have been solved, but there is still lacking a uniform agreement relative to some of these processes. From the clinical standpoint, however, there is a universal acceptance as to the successful applications of bone transplantations. Thus for the filling in of a bone defect, for the curing of a pseudo-arthrosis, for the producing of an ankylosis of the spine or the joint, and for the correcting of a nasal and other deformity, the transplantation of bone serves a very definite purpose. In all of these conditions a piece of diaphyseal bone with its periosteum is selected for the transplantation material.

From a practical standpoint it is not absolutely imperative that a transplant remain entirely alive and its cells be capable of proliferation, although if it possess these properties it is more likely to be successful. If it be demanded, in addition to the mere passive function of filling in a defect or acting as a framework for the ingrowth of neighboring bone, that the transplant must also possess the active property of increasing in length, within itself, then it is absolutely essential that its cells remain alive and be capable of dividing and extending in a linear direction.

As the longitudinal growth of bone is due to proliferation of the tissue at and adjoining the epiphyseal cartilage, it is necessary to include that part of bone in a transplant when an increase in length is desired. It is not alone sufficient that the cells of the part remain alive after transplantation, but they must retain their ability to multiply in such a manner as to further increase the length growth. In such a case there is an additional requirement of the transplanted tissue besides the mere supporting property of diaphyseal bone. This additional requirement demands that the tissue retain the active function and inherent property of the normal epiphysis to increase the length of bone. The epiphysis is to be considered as a highly specialized tissue which will undoubtedly respond to the general laws of regeneration and transplantation, in that the more highly differentiated the tissue and the more dependent on its blood, vascular, lymphatic and trophic nerve supply it be, the less likely is the possibility of the successful transplantation of that particular tissue. On the independency of the epiphysis to withstand these losses depends its functional transplantability.

It is surprising that this interesting and complex subject has not been more extensively investigated. Aside from the scientific problems connected with such a study there are offered numerous opportunities for clinical applications of a successful method. Instances of such possibilities are found in cases of destruction of the epiphysis following tuberculosis and acute infection of the bones in early childhood; in certain neoplasms necessitating the removal of the epiphysis, in congenital shortening of the limbs, in defective growth after infantile paralysis, in destructive traumatic injuries of the epiphysis, in rachitis, and in congenital dislocations of the hip. Since the reports of transplantation of joints by Lexer, Kuttner and others, it would be very important to know the behavior of the epiphysis after transplantation before attempting such procedures on growing individuals.

From the optimistic conclusions of Rehn and Wakabajashi[1] in 1912, one would be entirely justified in attempting to perform the transplantation of the epiphysis in order to correct any of the above-mentioned conditions when there was loss of the function or the destruction of the epiphysis. These investigators performed homoplastic transplantations on two months old rabbits of the same brood, using the upper end of the radius including the epiphyseal cartilage. They concluded from their experiments that the epiphyseal cartilage after homoplastic transplantations retains its full life properties, showing no evidence of degeneration, and from the very first took over the function of its resected predecessor. These conclusions cannot be accepted without comment, as they were drawn from experiments in which the proximal part of the radius was transplanted, the epiphysis of which shares only a small part in the production of the length growth and therefore a failure of its functions would not be very noticeable when compared with the marked activity of the distal epiphysis. They have relied entirely on a comparison of the roentgenograms of the two feet which were only taken at the conclusion of the experiment in order to determine the variation in growth. As the place of union was evident in

* From the Pathological Laboratory and the Surgical Pathological Laboratory of Leland Stanford, Jr. University School of Medicine.
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1. Rehn, E., and Wakabajashi: Die homoplastische Transplantation des Intermediarknorpels im Thierexperiment, Arch. f. klin. Chir., 1912, xcvii, 1.

their experiments they could have easily determined, by means of measuring at the time of the operation and at conclusion of the experiments, whether or not the transplanted piece actually increased in length.

In the same year appeared Axhausen's[2] experimental work in which he performed homotransplantations in young rabbits. He used the lower end of the femur, thin sheets of epiphyseal cartilage, and patella, for his transplantation material and transplanted them under the skin. He found that the greater part of the epiphysis died and that only that part remained alive which was situated beneath the perichondrium. In the middle part of the epiphysis he noticed degenerated areas, and he claimed that ossification took place only in the cartilage that remained alive. In these experiments there was lacking functional stimulation, and for that reason the results are open to criticism.

The results of Axhausen's work were diametrically opposite to Rehn and Wakabajashi. On the other hand, they agreed to a certain extent, with those of Enderlen[3] and Helferich.[4] The latter investigators, who were the pioneer workers on this particular subject, performed experiments of epiphyseal transplantations as early as 1899. They reimplanted the epiphysis in rabbits, using the lower epiphyseal cartilage of the ulna with an adjoining piece of the epiphysis and the diaphysis. Helferich, from the macroscopic findings, reported that the epiphyseal cartilage under favorable conditions need not lose its property of producing length growth. A lessening of this property might be observed but there was not an entire loss. Enderlen, who made the microscopic study of these preparations, reported that the reimplanted epiphyseal cartilage retained its vitality to a large extent. In agreement with Axhausen he noticed that the best maintained were those parts near the perichondrium, while those at the center showed evidence of degeneration. There was an increase in width of the epiphyseal cartilage due to an ossification coming from the living cartilage. The ulna was retarded in growth and, on that account, caused a bending of the radius.

Aside from the investigations of Zoppi[5] who found in his autotransplantation of the epiphysis a regular healing in and the formation of new bone, while in his heteroplastic transplantations there resulted a complete failure; and the studies of Galcarzi,[6] who found that there was a calcification of the epiphysis and loss of function in both auto and homotransplantation, there have been no other attempts to solve this problem prior to the beginning of the present work. During the last year several additional articles have appeared and they will be briefly reviewed.

Of these recent articles the first that appeared was by von Tappeiner[7] who performed reimplantations and homotransplantations on dogs six and twelve weeks of age, using the distal half of the metatarsal. In his reimplantations he found that there was no disturbance in length growth even after six months, while in his homotransplantations he noticed a regular increasing shortening which was proportional to the length of time that had elapsed. He emphasized the importance of early function, and states that the younger the animal the less the amount of shortening. From his homotransplantations he concluded that for clinical applications the transplantations of the epiphysis is unsuccessful.

A short time later there appeared an extensive article by Obata[8] who performed on rabbits reimplantations, autotransplantations and homotransplantations of the entire metatarsophalangeal joint with either a part or an entire metatarsal and phalanx. In some experiments the transplants were made from the dead animal either with or without keeping for a time in salt solution. He also repeated the experiments of Rehn and Wakabajashi by transplanting the head of the radius from one animal to another. In his conclusions he stated that there was more or less shortening in all the cases, but that it was most marked in the homotransplantations. A bony union occurred in all the experiments except in homotransplantations, in which condition a pseudo-arthrosis resulted. In homotransplantations of the head of the radius he found only a slight degree of shortening. He does not agree with Rehn and Wakabajashi that this transplanted epiphysis functionated, but ascribes the evening up of growth to more extensive proliferation of the distal epiphysis. In the transplantations from the dead animal he noticed no evidence of growth and found with one exception that a pseudo-arthrosis occurred.

The next article that appeared was by Heller,[9] who carried out reimplantations of the distal epiphysis of the radius and ulna as well as homotransplantations between related and nonrelated rabbits. He also made a few reimplantations and autotransplantations in goats. He reported that the epiphysis did not keep up its normal length growth in any of the forty-five experiments in which the epiphyseal cartilage was transplanted in the form of half joints. The least amount of shortening took place in the reimplantations, while a greater degree occurred in homoplastic transplants, most marked in the nonrelated animals. In homoplastic transplantation he believed there was a complete cessation in function of the epiphysis, and he ascribed all growths to the nonoperated proximal epiphysis. From his experience with goats, because of the more marked degree of shortening, he concludes that the larger the transplant and the greater the size of the animal, the more marked will be the shortening. In concluding, he said that in autotransplantations there was a lively regeneration of the epiphyseal cartilage from the perichondrium and that a not inconsiderable amount of bone apposition could be recognized, but nevertheless the bone growth remained checked and could not be utilized for practical purposes, especially so in cases of homotransplantations. He thinks that the most favorable conditions for the transplantation of the epiphyseal cartilage would be in the form of a thin sheet without adhering bone particles, so that it could come more directly in contact with the nourishing

2. Axhausen, G.: Ueber den histologischen Vorgang bei der Transplantation von Gelenkenden, in besondere über die Transplantationsfahigkeit von Gelenkknorpel und Epiphysenknorpel, Arch. f. klin. Chir., 1912, xcix, 1.
3. Enderlen: Zur Reimplantation des resecirten Intermediärknorpels beim Kaninchen, Deutsch. Ztschr. f. Chir., 1899, li, 574.
4. Helferich: Versuche über die Transplantation des Intermediärknorpels wachsender Rohrenknochen, Deutsch. Ztschr. f. Chir., 1899, li, 564.
5. Zoppi: Quoted by Rehn and Wakabajashi, Note 1.
6. Galcarzi: Quoted by Rehn and Wakabajashi, Note 1.
7. Von Tappeiner, Fr. H.: Studien zur Frage der Transplantations fahigkeit des Epiphysenknorpels und des Gelenkknorpels, Ztschr. f. d. ges. exper. Med., 1913, i, 491.
8. Obata, K.: Ueber Transplantation von Gelenken bei jungen Tieren, mit besonderer Berücksichtigung des Verhaltens des Intermediärknorpels. Beitr. z. path. Anat. u. z. allg. Path., 1914, xlix, 1.
9. Heller: Experimentelle Untersuchungen über die Transplantation des Intermediärknorpels in Form der halbseitigen Gelenktransplantation, Arch. f. klin. Chir., 1914, civ, 843.

fluids of the body. In a postscript he added that in his more recent experiments on two months old animals, in which after autotransplantations of the epiphyseal cartilage in the form of very thin sheets, he found almost a normal growth. The exact details of these experiments are not given, so one cannot conjecture on the cause of the variations from his previous results.

The most recent article is by Minoura[10] on the transplantation of metatarsophalangeal joints of two months old rabbits into the soft tissues. Either the whole or half joint that was either intact or split longitudinally was transplanted into the back, subcutaneous tissue, liver, or abdominal cavity of the same or different animal. In some instances the joint was placed in a Ringer's solution before transplantation or was removed from a dead animal. He observed that the transplanted joints became encapsulated after one or two weeks. The healing always appeared the same whether it was in the abdominal cavity, subcutaneous tissue, liver, or the muscle. The longitudinally split half joints underwent quicker organization than the unsplit and resorption took place more rapidly when the parts were allowed to remain in Ringer's solution. He concluded that autotransplantation was superior to homotransplantation and that the substitution processes were more active, quicker and intense, and that autoregeneration was more significant and continued for a longer period. Not much difference was noticed between transplants from the dead or from the living animal. In no case after transplantation, even in autotransplantation, was there any regular growth of the epiphyseal cartilage (only an irregular proliferation was found in the periphery) and in no case was there a lengthening of the transplanted joint. In comparing these experiments with those in which the transplantations were made into bone defects, it was noticed that the new formation was less evident, the degeneration appeared earlier in the new-formed tissue, and the resorption played a greater rôle, as in these cases the functional requirements of the respective tissue was lacking.

The prevailing opinions of these investigators indicate that the epiphyseal cartilage after transplantation loses more or less of its power to proliferate and thereby to increase the length of bone. In general they found considerable growth in reimplantations, less in autotransplantations, and practically none in homotransplantations. The greater the variations in the species the greater will be the growth disturbances. None of the authors agreed with Rehn and Wakabajashi in that there was no disturbance in growth after homotransplantation of the epiphysis.

All of the seventy-five experiments of this series were performed on dogs, the same animal often being used for two or more observations.

The majority of the animals were from one and a half to four months of age at the time of operation. In some animals the ages were not definitely known. They showed a definite growth after operation, but the metacarpals had not changed in length. This paradoxical condition can be explained by assuming that growth ceases in the metacarpals before it does in the longer bones.

The metacarpal and metatarsals were selected because they possessed but one epiphysis situated at the distal end of the bone and any growth which occurred could only be ascribed to proliferation at that particular epiphyseal cartilage. These bones were also easily measured at the time of operation and any change in length could readily be determined at the conclusion of the experiment. Another advantage in using these particular bones is that the adjoining bones serve as a natural splint.

10. Minoura, M.: Studien über Gelenktransplantation (inkl. Intermediarknorpel) in Weichteile, Frankfurter Ztschr. f. Path., 8, 1914, xv, 397.

METHOD OF OPERATION

All of the operations were performed under general ether anesthesia. The extremity was shaved and painted twice with tincture of iodin and the operation carried out with the usual aseptic technic.

The incision was made on the dorsal surface of the foot and special precautions were taken in order to preserve the normal vascular and nerve supply to that particular region.

In removing the segment to be transplanted special care was exercised so as not to injure the epiphyseal cartilage. In the very young animals a sharp knife was used, while in the older animals a small saw was necessary to sever the bony connections of the transplantation material.

The small transplants were anchored in place by means of an X-shaped silk suture, while the larger pieces were reinforced by an additional suture passed through the cortex of the diaphysis of each fragment. The total length of the operated and adjoining bones, also the removed and implanted segments were carefully measured. The wound was closed in layers and the foot encased in a plaster dressing, which was removed in from fourteen to twenty-one days. The animal was allowed its freedom from the start. Primary healing resulted in all but two cases.

At the conclusion of the experiment a roentgenogram was taken of the corresponding two feet. Then the foot was dissected and measurements made of all the metacarpals of both the operated and the normal foot. One half of a longitudinal section was preserved in Kaiserling's solution and the remaining part placed in Orth's fluid for further study.

It will be possible to give in this paper only the observations of the changes in growth following the various operative procedures.

In the interpretation of the results certain standards of comparison have been adopted in order to determine the various changes. The two inner metacarpals have been found from repeated observation on normal extremities to be of equal length or within 1 mm. of each other. It has also been noticed that the corresponding bones of each foot are practically of the same length. Thus there is a definite standard of comparison by means of which any change in growth may be calculated.

EXPERIMENTS

The following sets of experiments were performed:

1. Reimplantation of an entire metacarpal or metatarsal: In these experiments the entire bone with its articular surfaces and periosteum intact was raised from its position and immediately replaced. Table 1 shows the results.

Conclusion: After reimplantations of entire metacarpals or metatarsals, in growing animals, there is complete cessation of the growing function of the epiphysis.

TABLE 1.—REIMPLANTATION OF AN ENTIRE METACARPAL OR METATARSAL

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.	Remarks
1. E2	5	52	3.05	3.15	0.1	0.7	
2. E2	5	52	3.15	3.3	0.15	0.7	
3. E3	5	208	6.3	3.2	—0.1	0.4	
4. E3	5	208	6.3	3.2	—0.1	0.4	
5. E4	3.5	113	3.65	3.6	—0.05	2.95	
6. E4	3.5	113	3.65 cut	3.7	0.05	2.75	Incised
7. E5	7	107	5.5	5.2	—0.3	0	
8. E6	4	298	5.6	4.9	—0.6	0	
9. E6	4	298	5.6 cut	4.9	—0.7	0	Incised
10. E13-R	Old	115	Not taken. Growth ceased	Not taken	0	0	Incision; shows degen.
11. E13-L	Old	115	Not taken. Growth ceased; cut	Not taken	0	0	

TABLE 2.—AUTOTRANSPLANTATION OF AN ENTIRE METACARPAL OR METATARSAL

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.	Remarks
1. E1	5	109	6.9 cut	1.5	—5.4	0	Cut off end
2. E1	5	109	6.9	6.6	—0.3	0	
3. E17	9	36	6.7 cut	6.1	—0.5	0.3	Long incis. at both ends
4. E8	6	91	6.7 right	6.8	0.1	0	
5. E8	6	91	6.7 left	6.4	—0.3	0.2	
6. E10-R	3.5	89	4.8 cut	4.3	—0.5	0	Incision; showed evidence of degeneration
7. E10	3.5	89	4.8	4.3	—0.5	0	

TABLE 3.—REIMPLANTATION OF SPLIT METACARPAL OR METATARSAL

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Operated Bone Cm.	Remarks
1. E9	?	31	5.7	5.6	—0.1	0	
2. E14-6	4.5	237	5.9	5.8	—0.1	0	Consid. change in marrow
3. E15	6	38	5.8	5.8	0	0	
4. E18-2	6	223	6.05	3.3	—2.8	0	

TABLE 4.—AUTOTRANSPLANTATION OF SPLIT METACARPAL OR METATARSAL

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.	Remarks
1. E12	Very old	235	?	6.1	—0.2	0	Incised degen.
2. E17-R	6	36	6.7	6.1	—0.6	0.4	Incised end necrotic

TABLE 5.—REIMPLANTATION OF THE EPIPHYSEAL CARTILAGE

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.
1. E14-6	4.5	37	5.9	5.7	—0.2	0
2. E23-13	1.5	23	3.9	4.1	0.2	0.4
3. E23-14	?	4	3.6	3.8	0.2	0
4. E33-34	1.5	43	2.7	2.8	0.1	0.7
5. E38-26	4.0	55	4.4	4.2	—0.2	0.1
6. E41-39	5.0	43	4.55	4.5	—0.05	0.5

TABLE 6.—AUTOTRANSPLANTATION OF THE EPIPHYSEAL CARTILAGE

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.	Remarks
1. E9-4	?	86	5.1	5.0	0	0	
2. E10-5	3.5	89	4.8	4.5	—0.3	0.1	
3. E15-7	6.0	38	5.8	5.9	0	0	Piece inserted was 0.75 mm. wider than that removed
4. E23-13-R	1.75	23	4.0	4.2	0.2	0.6	
5. E23-13-L	1.75	23	3.6	3.8	0.2	0.4	
6. E32-39-R	1.75	136	2.5	2.85	0.35	1.4	
7. E32-39-L	1.75	136	2.55	2.9	0.35	1.4	

2. Autotransplantation of an Entire Metacarpal or Metatarsal: An entire bone was transplanted from one foot to another foot of the same animal. Results are given in Table 2.

Conclusion: The transplanted bones not only failed to grow, but showed definite evidence of degeneration and decrease in length.

3. Reimplantation of Split Metacarpal: The reimplanted bone was divided longitudinally and reinserted. Results are given in Table 3.

Conclusion: As these animals had reached the end of their growing period no observations can be made on the disturbances in growth lengthwise. Some of the bones showed definite evidence of absorption and decrease in length.

4. Autotransplantation of Split Metacarpal or Metatarsal: Before transplanting to another foot the bone was split longitudinally. Results are given in Table 4.

Conclusion: In the single observation in this group in which the animal showed evidence of growth in the normal bones there was a definite decrease in size of the transplant, showing that the splitting of the bone had no favoring influence on the viability of the epiphysis.

5. Reimplantation of the Epiphyseal Cartilage: In this series of experiments the epiphyseal cartilage, including a piece of adjoining epiphysis and diaphysis, was excised and immediately reimplanted. Table 5 gives the results.

TABLE 7.—REIMPLANTATION OF VARYING LENGTHS OF THE EPIPHYSEAL END OF THE METACARPAL AND THE METATARSAL BONES

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.
1. E5-1	5	107	Total 5.4; resected ½ piece 2.7	5.2	—0.2	0
2. E7	7	155	Total 7.4; resected ⅔ piece 4.4	3.7*	—3.7	0.3
3. E22-12	1.5	22	Total 4; resected ⅔ piece 2.55	3.9	—0.1	0.5
4. E30-38-R	?	13	Total 2.4; resected ⅓ piece 0.7	2.3	—0.1	0
5. E30-38-L	?	13	Total 2.4; resected ⅔ piece 1.8	2.5	0.1	0
6. E31-36	1.75	17	Total 2.5; resected ½ piece 1.25	2.5	0	0.1
7. E33-44	1.5	44	Total 2.7; resected ½ piece 1.5	2.7	0	0.7
8. E34-43-L	1.5	115	Total 2.8; resected ⅓ piece 1.1	3.25	0.45	1.20
9. E34-43-R	1.5	115	Total 2.8; resected ⅔ piece 2.0	2.95	0.15	1.45
10. E37-40	2	38	Total 3.05; resected ⅔ piece 2.3	3.0	0	0.3
11. E38-26	4	85	Total 4.5; resected ½ piece 2.25	4.2†	—0.3	0
12. E41-39	4.75	44	Total 4.4; resected ⅓ piece 1.8	4.3‡	—0.1	0.5

* Infection. † Bored holes—nonunion at operation. ‡ Nonunion.

TABLE 8.—AUTOTRANSPLANTATION OF VARYING LENGTHS OF EPIPHYSEAL END OF METACARPAL AND METATARSAL BONES

Number	Age Mos.	Duration of Experiment Days	Measurement at Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.
1. E19-5	5.0	34	Total 5.6; resected ½ piece 2.5	5.65	0.05	0.6
2. E19-5-R	5.0	34	Total 5.6; resected ½ piece 2.6	5.6	0	0.6
3. E20-10-L	1.5	25	Total 3.6; resected ½ piece 1.8	3.6	0	0.5
4. E21-11	1.5	42	Total 3.8; resected ½ piece 1.9	3.7	0	0.6
5. E29-37-R	2	143	Total 2.6; resected ⅓ piece 0.7	2.75	0.15	1.15
6. E29-37-L	2	143	Total 2.5; resected ⅓ piece 0.7	2.6	0.1	1.3
7. E35-41-R	1.75	111	Total 3.0; resected ½ piece 1.55	3.0	0	1.6
8. E35-41-L	1.75	111	Total 2.95; resected ½ piece 1.5	3.0	0	1.4
9. E36-42-R	1.75	43	Total 2.8; resected ⅔ piece 2.1	2.9	0.1	0.55
10. E36-42-L	1.75	43	Total 2.9; resected ⅔ piece 2.1	2.95	0.05	0.6
11. E10-37-L	5.5	43	Total 4.3; resected ⅓ piece 1.8	4.2	0	0
12. E40-37-R. Homo	5.5	43	Total 4.1; resected ⅓ piece 1.6	3.9	0	0.15

TABLE 9.—TWO STAGE AUTOTRANSPLANTATION OF DIFFERENT LENGTHS OF THE EPIPHYSEAL END OF THE METACARPAL AND THE METATARSAL BONES

Number	Age Mos.	Duration of Experiment Days	Measurement at First Operation Cm.	Measurement at Second Operation Cm.	Measurement at Necropsy Cm.	Growth of Operated Bone Cm.	Growth of Normal Bone Cm.
1. E16	9.0	89	Total 6.9; resected ½ piece 3.2	No second operation	6.9	0	0.
2. E20-10	1.5	25	Total 3.5; resected ½ piece 1.9	Not taken; union at first	4.0*	0.5	0.5
3. E21-11	1.5	42	Total 3.7; resected ½ piece 1.9	No second operation	4.3	0.6	0.6
4. E22-12	1.5	22	Total 3.9; resected ⅔ piece 2.85	No second operation	4.0†	0.1	0.4
5. E25-26	2.0	155	Total 4; resected ½ piece 1.9	Total? Resected piece 2	3.6†	—0.4	0.15
6. E26-27	1.5	64	Total 3.1; resected ½ piece 1.5	Total 3.7. Resected piece ?	3.85	0.75	1.6
7. E27-28	1.5	80	Total 2.9; resected ⅓ piece 1	Not taken	3.3‡	0.4	1.6
8. E28-29	1.5	67	Total 3; resected ⅔ piece 2.3	Total 3.7. Resected piece 3.	3.9	0.9	1.5
9. E37-40	2.0	38	Total 3; resected ⅓ piece 1	Total 3.25. Resected piece 1.2	3.3	0.3	0.3
10. E39-41	1.75	46	Total 4.4; resected ⅓ piece 1.6	Total 4.4. Resected piece ?	4.25‡	—0.15	1.1

* Died two days after second operation. Nonunion at second operation. † Nonunion. ‡ Nonunion first.

Conclusion: In none of these experiments was there an increase of more than 2 mm. in length since the operation, while the normal bones showed as much as 7 mm. of growth. A difference of 2 mm. in length is within the limits of error in measurement or lengthening due to failure of close approximation. After reimplantation of the epiphyseal cartilage there is at first a slight increase in length while at a later period there is a decrease in length.

6. Autotransplantation of the Epiphyseal Cartilage: In these experiments the resected epiphyseal cartilage was interchanged with a corresponding piece from a bone of the other foot. Results are noted in Table 6.

Conclusion: With the exception of two experiments there was no definite evidence of increase in size after autotransplantation of the epiphyseal cartilage. In these two positive results the increase in size was very limited, being only 0.35 cm. as compared with 1.4 cm. of normal growth. On section of the bones the epiphysis of the operated bones showed definite signs of degeneration, while the epiphysis of the nonoperated bones presented a normal appearance. After autotransplantation of the epiphyseal cartilage its function to increase in a linear direction is entirely lost or only persists in a very limited degree.

7. Reimplantation of Varying Lengths of the Epiphyseal End of the Metacarpal and Metatarsal Bones: In this series of experiments one third, one half and two thirds of the epiphyseal end of the metacarpal was removed entirely from its normal bed and reinserted immediately in the same position. Results are noted in Table 7.

Conclusion: In none of these cases with the one exception of Experiment 8 E 34-43 L, was there any evidence of increase in length growth. The exact reason for the increase in this experiment cannot be definitely determined. It is possible that for some special reason this particular epiphysis proliferated for a short time. In the gross specimen there is no evidence of epiphyseal cartilage, so what growth occurred took place early and only for a limited time. In view of the large number of negative results this experiment cannot be definitely considered as indicating an active functioning of the transplanted epiphysis. Whether a long or short piece of bone was transplanted with the epiphysis was of no consequence as there was practically complete failure of the growth in every case. Incisions or boring of holes into the bone seem to hasten the degenerative processes.

8. Autotransplantation of Varying Lengths of the Epiphyseal End of the Metacarpal or Metatarsal: These experiments differ from those of the previous group (7) in that the segment of bone was interchanged with a corresponding segment from the opposite foot. Results are noted in Table 8.

Conclusion: There is a uniform failure of growth after autotransplantation of varying lengths of the epiphyseal end of the bones. The normal bones show a marked increase in length. Boring holes into transplants increases the degenerative processes.

9. Two Stage Autotransplantation of Different Lengths of the Epiphyseal End of the Metacarpal or Metatarsal: In this set of experiments the distal one-third, one-half or two-thirds was united to the proximal two-thirds, one-half or one-third respectively of the adjoining metacarpal or metatarsal. After a sufficient length of time for union had elapsed a second operation was performed in which the distal segment was entirely separated from its surrounding tissues, thereby completing the autotransplantation. Results are shown in Table 9.

Conclusion: In this set of experiments there was evidence of almost normal growth up to the time of the second operation, but after severing the epiphyseal end from its surrounding tissue there was a marked diminution in growth. This shortening took place even when there was firm union with the normal proximal segment. It was noticed that in cases where nonunion occurred that there was more marked disturbances in growth — even in the first part of the experiment. Under these very favorable conditions for transplantation there was considerable diminution of the function of the epiphysis after transplantation.

GENERAL CONCLUSIONS

1. From the practically uniform failure of increase in length of the bones after transplantation of the epiphyseal cartilage, either alone or with an accompanying piece of the epiphysis and diaphysis, both in reimplantation and autotransplantation, it must be concluded that epiphyseal cartilage loses its power to functionate after such transplantations.

2. As the degenerative processes were more advanced in autotransplantation than in reimplantation, it can be almost certainly predicted that there would be a more marked degeneration in homotransplantation.

3. Whether a small or large sized transplant was taken was of no consequence, as there was the same failure of growth in every instance. Incisions into the periosteum or boring holes into the cortex hastened the degenerative processes.

4. There was marked disturbance of growth following the two-stage autotransplantation, in spite of the fact that osseous union was secured before severing the epiphyseal transplant from its surrounding and nourishing tissues.

5. The epiphyseal cartilage must be considered as a very vulnerable tissue, its viability being directly dependent upon its blood supply.

Shreve Building.

ABSTRACT OF DISCUSSION

DR. D. B. PHEMISTER, Chicago: The finding of Dr. Haas that there is apparently no longitudinal growth through the epiphyseal cartilage after transplantation is very interesting. One would expect cartilage to live if any tissue lives when transplanted, because it is nourished by a lymphatic instead of a blood vascular circulation. Hyaline articular cartilage covering the ends of bones is frequently detached with or without a portion of underlying bone and becomes a loose body in the joint. The bone cells, if any are present, always die and are absorbed, but the cartilage, receiving sufficient nutrition from the synovial fluid, remains alive indefinitely. The deeper cells which have a columnar arrangement slowly undergo necrosis. I have studied histologically ten or twelve such specimens of the various ages and have noted transformation of the superficial cartilage into fibrinous connective tissue in the older specimens. In one specimen that had been free in the joint for ten years there was proliferation of the cartilage and a connective tissue capsule had formed. The injury of the transplant resulting in disturbance of longitudinal growth might be either to the epiphyseal line or to the juxta-epiphyseal bone. The small amount of longitudinal growth occurring in some of his experiments might possibly be accounted for by longitudinal growth in the shaft itself. We see the shaft of a bone increase one-half an inch or more in length as a result of an inflammatory process, as syphilis or in osteitis deformans, where the epiphyseal lines are closed. Consequently, there

is no reason why in the absence of the normal process of longitudinal growth, and where there is a great demand for it, the cells of the shaft should not proliferate and increase the length of the bone.

DR. J. T. RUGH, Philadelphia: I think the important lesson for us as practical orthopedic surgeons is the postponement of our operative work in this type of cases until adult life or until the expectation of any natural increase in growth is past. I know in my own experience I have been sorely tempted at times to replace a very imperfect hip joint, in the case of congenital dislocation, or similar condition, with the head of the fibula, but have thus far refrained, and I shall continue to do so in the future. The lesson I have learned from this experimental work of Dr. Haas has been of enormous importance.

DR. ROLAND MEISENBACH, Buffalo: The work of Dr. Haas, in my opinion, is of great value. Although he has gotten some negative results, I think it touches on many things of value which will in the future give us a better understanding of one of the most important parts of the long bone; namely, the epiphysis. It may also assist in giving us a better understanding of the function of the epiphysis. I am particularly interested in this work because several years ago I did some research work on the chemical and mechanical stimulation of the epiphysis. In this work, I had occasion to observe the epiphysis both microscopically and macroscopically in about two hundred rabbits. In studying the epiphyseal and diaphyseal lines, it was interesting to see from the experimental work the close relation to the practical work; that is, the cases which we see daily that have interference of growth or which have stimulation of growth of the epiphysis. This work is really the fundamental source of all fracture and bone-graft work. I would like to ask Dr. Haas whether the transplant is divided from above or below the diaphyseal line. This will, I believe, change the results of the experiments materially. In my experiments I was able to stimulate and retard bone growth, depending on which part of the epiphyseal cartilage was attacked in the experiment. I have a few lantern slides which I prepared for the Pan-American Congress which show sections of the epiphysis and epiphyseal line in different stages of stimulation. That is, that by either toxic or mechanical means it is possible to cause more bone to form in the region of the epiphyseal end of long bones, as in my experiments with tibias, or to almost cause an arrest of growth. One slide shows that by means of toxic agents it has been possible to cause the entire epiphyseal line to close at a much earlier period by months than normally. This explains, I believe, many of the cases which have focal infection at some part of the body that later on developed joint lesions, and in which the joints became deformed; also it explains the arrest of growth following fractures, and therefore I think that an attempt to transplant the epiphysis depends largely on the point from which we take the transplant and the technic employed.

DR. S. L. HAAS, San Francisco: As Dr. Phemister has mentioned, cartilage is a very resistant tissue. It is able to withstand a considerable amount of injury and is dependent on the surrounding tissues and fluids for its nourishment. I have only studied a few microscopic preparations from these experiments and have found that the cartilage near the perichondrium remained alive. It is possible that some of this cartilage may continue to proliferate, but I doubt if it would cause any decided increase in the length of the bone. There is a distinction between growth in length and increase in size. It was noticed in some of these experiments that there was a marked swelling about the epiphyseal cartilage without any increase in length, showing that although there was cell growth there was no purposeful longitudinal increase like the normal epiphyseal cartilage. It was merely the regular cell division and multiplication which manifested itself by spreading in the line of least resistance. It was shown in the old experiments of Hunter and Duhamel that the longitudinal growth of bone takes place only at the epiphyseal ends. In these experiments two pegs were driven into the diaphysis and in spite of an increase in length of the bone there was no change in the distance between the two pegs. As to the increase in length following destructive osteomyelitis, it might be due to the general wild multiplication during the processes of regeneration, which, being unrestricted, spread in all directions.

In regard to Dr. Meisenbach's question as to whether the transplantation was made above or below the epiphyseal line, I presume he wishes to ascertain the relation of the incisions to the metaphysis, which is the most actively growing part of the bone. In all the excisions of the epiphyseal cartilage a piece of adjoining epiphyseal and diaphyseal bone was removed so as not to injure that particular region. Heller, in a postscript to his article, stated that he had succeeded in transplanting the epiphyseal cartilage in the form of very thin sheets of cartilage and that there resulted almost a normal growth. He does not give the exact details of his experiments, but from the results of my experiments I am forced to entertain some doubt as to the correctness of his conclusions. It is possible that by some special method he is able to get these good results.

THE RELATION OF THE ROENTGENOLOGIST TO THE HOSPITAL*

H. W. VAN ALLEN, M.D.
SPRINGFIELD, MASS.

The reason for presenting a paper dealing with the relation of the roentgenologist and the hospital comes from the very great variation of such relation at present. Were any one of the methods now in vogue approaching idealism, it would be shown by the number adopting such a method; while a study seems to show greater variation as time goes on. My attention was first called to this subject by the investigation made by a state committee in regard to patients coming to hospitals under the Massachusetts workmen's compensation act. This investigation showed no two institutions in the entire commonwealth making arrangements that could by any means be called similar. In medicine a multiplicity of drugs recommended for a particular disease shows a competency of none, and so it is fair to suppose the roentgenologist and the hospitals have not yet found a satisfactory arrangement one with the other.

The growth of the applications of the Roentgen ray is responsible for this condition. When first given to the medical profession, it promised to be one of the most limited specialties. The locating of dense foreign bodies and fractures of the bones of the extremities was its entire field. Now I say without hesitation there is no broader specialty in medicine. I cannot think of a single branch of the profession which does not call the Roentgen ray to its aid at times. Any medical journal is proof of the wide scope of this specialty, and more than half the articles show the dependence placed on the ray, either in diagnosis or in treatment.

The original roentgenologist was usually a photographer, electrician or a young and budding physician, hoping to use this as a stepping-stone to something more tangible. It was the way this original work was done that to a certain extent is the fault of the present condition. Many hospital superintendents and not a few physicians have failed to keep pace with the Roentgen progress and know the kind

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of man now required. A competent roentgenologist must have primarily a good knowledge of medicine in its various branches; he must be well versed in general science, with special information in regard to electricity, and, furthermore, he must have a working knowledge of photography. All these requirements being fulfilled, he must have the ability to acquire special acumen in interpretation of the shadow shown on Roentgen-ray plates. This mental coordination of the shadows and placing the right significance on each is almost an instinct, and if one fails in this, all other qualities cannot make one a real roentgenologist. Thus the roentgenologist must have combined medical, electric and photographic information to succeed.

Many serious operations rest entirely on the Roentgen-ray findings. Why have less than the best skill in determining these findings? When the people come to know that their hospital treatment often rests on the Roentgen evidence found at entrance, they will select a hospital where this work can be best done. They should know that the expense of maintaining the rapidly improving Roentgen-ray apparatus is great, and proper fees must be arranged. A price per plate is the poorest way to estimate the cost, as the plate is the smallest item of expense. Hospital managers should trust their roentgenologist to carry on the entire department, including the financial policy, or take time to make a more thorough and comprehensive study than many are doing at present.

In writing this paper, I have had in mind more particularly the hospitals of 150 beds or less. A paper written recently by Dr. I. S. Hirsch[1] of New York has dealt admirably with the requirements of a large metropolitan hospital. Many of the requirements of such a hospital do not, however, apply in the one with the number of beds just referred to. In such hospitals it is not practicable to maintain a Roentgen staff, but one man with an assistant or two can make a creditable reputation for himself and the institution.

The cost of equipping and maintaining the Roentgen-ray department of hospitals is constantly under discussion. The rapid evolution of the Roentgen-ray machine has made changes necessary so often that up to the present time the money for instruments must come from other sources than the daily revenue of the department. When such a time comes that no radically new type of instrument is required, this expense will immediately be materially lessened. The cost of maintenance, however, except where the free bed system or outpatient department is very large, should be derived from the patients themselves.

This brings us to the question of private patients' fees. I maintain that they should be the same as in the roentgenologist's private laboratory; otherwise he would be a competitor with himself. The division of this fee between the roentgenologist and the hospital will vary, of course. The greater the skill of the roentgenologist, the larger his proportion. It should always be kept in mind that it is the perfection in technic and skill in plate reading that is required, rather than the sale of so many plates made on an instrument costing so much. Ordinarily, hospitals should not retain more than 25 per cent. of the fee charged private patients to cover the overhead expenses. Under few circumstances should the roentgenologist (who, I have said, should be a physician) sell his services at a fixed sum per year to a hospital. It opens opportunities for practices which are not elevating professionally, and are a source of constant friction.

The relation of the roentgenologist to the hospital staff is another question often discussed. If he is a real roentgenologist, his place on the staff should be the same as that of any physician doing special work. This place has not always been conceded him, owing in part to the confusion in the early days as to who should be a roentgenologist.

His report should also be in the nature of a consultation rather than that of a laboratory report. This report may be written, but I believe should be supplemented when possible by a verbal one, going into the various possibilities that may be recognized only by the roentgenologist in consultation with the clinician. It is only in this way that the patient can get the full benefit of our professional skill. The method of stated staff consultation is in vogue in Germany, and much of the diagnostic acumen of the Germans is due to this close relation into which the members of the staff are thrown.

The necessity of the preservation of the finished plate is not recognized sufficiently by the vast majority of hospitals. Too many times every one has access to them, and plates may be removed to be replaced at will or even not at all. These plates are an accurate record of the condition of a patient at a given time, and in many cases cannot be duplicated. A plate which, when taken, seems of ordinary moment may later become of the greatest value, either in treatment or medicolegally. All should be preserved. No one but the roentgenologist or his assistant should have the right of access to the files, and if for any reason plates are removed, they should be signed for and a record blank deposited in the place of the plate, showing who has taken it; and when it is returned, credit should be given for its return.

The plate legally belongs to the hospital or the roentgenologist, and never to the patient. He is entitled only to the information obtained from it, and given through his physician.

A medicolegal aspect too little recognized is that the roentgenologist must identify the plate himself in court. A medical man who simply borrows the plate to appear in court has evidence of no value. He cannot under oath connect it in any way with the patient. He did not see it developed, he has no mark on it which shows there was not an exchange made in the dark room, and moreover, he is not an expert in plate interpretation. The roentgenologist should have full control of the plate library, demonstrating the plates when required.

The method of preserving these plates hardly comes within the scope of this paper. It will vary with the size and requirements, as teaching, etc. It is a duty to the hospital, owed by the roentgenologist, to see that these plates are well preserved.

My plea in this paper has been for a closer relation medically of the roentgenologist to the hospital, and for a recognition of his ability. On his part, it is a duty to use his general medical acumen as well as his technical Roentgen information. Also there is a necessity for his being in entire charge of the department, which should be well correlated in all its branches.

19 Maple Street.

1. Hirsch, I. S.: Mod. Hosp., January, 1915, p. 11.

ABSTRACT OF DISCUSSION

DR. A. R. WARNER, Cleveland: The Roentgen-ray department has become an important specialty of hospitals and it has gone beyond the stage of a novelty. It is an essential. The principle brought out as to diagnosis and the handling of diagnoses and information in regard to patients as expressed in the paper I am quite sure is correct. We have had some trouble with this matter on several occasions in Ohio and each time the courts have held as the paper expressed.

DR. JOSEPH M. SPELLISSY, Philadelphia: Dr. Van Allen mentioned the possession of the plates. I think we all agree that the plate should belong to the hospital. Where a great many plates are made the storage and preservation of the plates has become a bugbear in a large institution doing a large amount of work, so that plates are destroyed within a year. I know at the University Hospital, Philadelphia, with which I am closely associated, they have a department of photographic records there in which I am interested in standardizing photographic records and also Roentgen-ray plates. I have made Roentgen plates myself. I presented this morning a Roentgen-ray tracing such as we use in St. Joseph's Hospital. The paper is either "onion skin" or what is called buff manifold paper. It is transparent. It has printed on it the date of taking the plate and then the roentgenologist makes a tracing of the plate on the paper and that paper is bound with the records of the patient, so that if the plate is destroyed it still remains of value to the physician or surgeon.

MR. F. M. NESMITH, Oakland, Calif.: I would like to ask Dr. Spellissy if that record is accepted in court?

DR. SPELLISSY: I do not know. It has been mentioned that a roentgenologist sometimes goes to court. The testimony I should think would be acceptable that that was his tracing of what he saw in the plate. Where a plate is produced itself I have known the most eminent roentgenologists to disagree in the interpretation, and they would throw out the testimony.

DR. W. H. WALSH, Philadelphia: I do not believe that the roentgenologist of a hospital should be permitted to have anything to do with the financial policy of the Roentgen-ray department, this question being one entirely within the province of the management of the institution. There should be no question as to the desirability of consulting the roentgenologist in all questions regarding the equipment of his department, but when questions of cost are involved they must be finally decided by the administrator. I can see no more reason in permitting the roentgenologist or the pathologist to handle the financial policies of their respective departments than I do in allowing the visiting physicians or surgeons of the staff to meddle in the financial matters.

With respect to the question of the division of fees between the roentgenologist and the hospital, I must express my disapproval of such an arrangement, as I do not think they work out to the ultimate benefit of either of the principals. There is no good and sufficient reason why the roentgenologist or members of the staff should not be the recipients of salaries for their work, a procedure which in no way affects the dignity of their position, nor which could prejudice their professional standing. Being opposed to the very proposition of dividing fees, *any* division would be objectionable to me; but I am rather inclined to think that the hospital that only retains 25 per cent. of the fees received, supplying as it does the apparatus, supplies, electrical current and assistants, is not getting its due, and I should feel inclined to reverse the arrangement, allowing the roentgenologist 25 per cent. and the hospital 75 per cent., a more equitable division.

DR. H. W. VAN ALLEN, Springfield, Mass.: In Massachusetts, at least, tracings of plates are not admitted as evidence in court. The actual plate is the only exhibit allowed. Tracings may accompany the plates in an explanatory way, as they are much more easily understood by the jury. If a plate has been lost or destroyed the roentgenologist may state his best memory of the plate, but cannot introduce a diagram.

Of course I do not have as large a Roentgen clinic as Dr. Spellissy of Philadelphia, but in proportion our space is as valuable. We, however, keep our plates easily accessible until one year old and then they are taken to space less valuable in the hospital and permanently stored. This is a necessity, as frequently they are required for reference to note changes in chronic cases, as well as for teaching and for court cases; the latter not required at times for several years after the plate is made. One recently was required after an interval of seven years.

In regard to the financial part, I believe it should be under the roentgenologist's control. It is so in the hospitals I am connected with, and the plan works nicely. Superintendents do not know the requirements of such a rapidly changing specialty, and I have found they appreciate careful financing, which can only be done by one familiar with the work. As to the 25 per cent. taken out for expenses by the hospital on private patient's fees, careful study of the subject makes me think this is about correct. It may vary in some hospitals slightly. This percentage (at rates charged in private laboratories) will cover actual expenses on private patients and it is self evident that the remainder is paid for the skill of the operator, and any of this going to the hospital would be as deplorable as fee-splitting is between doctors.

MANUFACTURE AND ADMINISTRATION OF NITROUS OXID FOR ANESTHESIA

THE EXPERIENCE OF LAKESIDE HOSPITAL *

A. R. WARNER, M.D.
CLEVELAND

At Lakeside Hospital, nitrous oxid gas has been used for anesthesia extensively for about eight years, and has been manufactured as a routine in the hospital for more than six years.

For the first four of these years, the gas we manufactured was not entirely satisfactory to any one, and at times was not without harmful effects. This was overlooked at first, partly because, on the whole, we had as good results as others, and partly because it was then believed that a certain amount of cyanosis was necessarily present during nitrous oxid-oxygen anesthesia, and that bad after-effects were in a measure to be expected. As our anesthetists developed more skill with this anesthetic, they were able to demonstrate to us that the cyanosis, the irritation, and the symptoms of toxemia following the anesthesia were present to a greater or less extent in all or in several patients on the same day, and that on other days there were no such symptoms at all: they convinced us that the gas made in the hospital contained a variable amount of some poison. Commercial gas, although producing at times the same symptoms of toxicity, seemed more uniform and distinctly less irritating. This difference was fairly constant, although our plant and methods of manufacture were the same as the commercial plants and methods known to us. On our worst day one patient of the gynecologic service died with all the symptoms of a severe toxemia a few hours after a simple operation; one patient of the surgical service was severely poisoned, and three others suffered to a lesser extent. The predominating symptom of the poisoning was a cyanosis that no amount of oxygen could dispel. The hemoglobin was evidently

* Read before the Section on Hospitals at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

damaged, and our surgeons learned that outdoor fresh air treatment was the most effective treatment. The condition, with the exception of the color, resembled carbon monoxid poisoning, yet unfortunately no spectroscopic examinations of the blood of these patients were made.

About two years ago, it became evident to all that nitrous oxid must be obtained in greater purity, or its use in the hospital abandoned. On the good days this anesthesia was so satisfactory to the surgeons, so unobjectionable to the patient, and made the operative cases so easy to care for in the ward, that it seemed ideal for hospital use. In our opinion these facts justified every effort to make it right. The best consulting chemists obtainable were called to examine the plant and methods. Each pointed out possible defects, and all agreed that better apparatus and methods could probably be developed by experiment. Each called attention to the great number of the possible impurities. One of our trustees, Mr. H. M. Hanna, then offered to provide the funds necessary to run an experimental plant at the hospital, and I undertook to solve in such a plant the two following problems:

1. To find a method for the manufacture of nitrous oxid of sufficient purity to be without poisonous effect.

2. To devise apparatus by which this can be done as a routine in hospitals under hospital conditions.

The details of many experiments with new chemical processes and types of apparatus need not be presented. The entire plant was rebuilt several times. The net result of the first six months' work was only more uniform gas: we did not have the very bad days, yet the evidences of toxicity continued. About this time we found that nitric oxid, even when present in large amounts, was entirely removed from the nitrous oxid by confining in iron tanks or over water for a few hours. This explained the lesser irritation from commercial gas, which stands longer in the gasometers and is always shipped in iron cylinders. Commercial gas has always been free from nitric oxid, and our gas — sometimes used without standing long in the tanks — had not been. In these experiments we became convinced that the poisonous effects were, at times at least, not from the nitric oxid, which has been the generally dreaded impurity. We learned, too, that the effect of the poison was cumulative, and that a long anesthesia was the most delicate available test. In comparison with this, all analyses and chemical tests were crude.

The impurities theoretically possible to produce in the destructive distillation of even a pure ammonium nitrate in an iron or other reducing retort are many. Among these are many of the more highly organized, well-known, hemoglobin poisons, as the hydrazins and hydroxylamins. It was at least possible that some of these were causing the trouble. Our gas and the best samples of commercial gas obtainable were tested, and all were found slightly alkaline to phenolphthalein. Published analysis of commercial nitrous oxid made by reliable chemists had reported the presence of traces of ammonium compounds and other nitrogenous substances which certified to the presence of ammonia or of substances breaking down to ammonia. To test the hypothesis that these basic compounds might be the poison, a thorough washing with strong sulphuric acid was then added to the process of purification of the gas, for the purpose of removing all free basic radicals. On this day — now over a year ago — our gas became absolutely neutral in reaction, and the peculiar cyanosis and all other symptoms of toxicity disappeared from our operating rooms, never to appear again when acid-washed gas was used. We did, however, see it in varying degrees each time that the installation of new apparatus in the plant made it necessary to shut down and use for a few days commercial gas not scrubbed with acid. All of our days are good days now: we are enjoying the advantages of this anesthetic without the disadvantages which had been so constant as to become regarded as necessary and belonging to it.

Confirming evidence came from independent sources. The Ohio Chemical Company of Cleveland noted our better results, and remodeled their plant. Three competent anesthetists, whom I have happened to meet, one from Boston, one from New York and one from Ithaca, volunteered information regarding the uniformly better results which they were having with the Ohio gas, all dating the better results from the date the company remodeled its plant and instituted the acid wash as a part of the purification process. Later the Lennox Chemical Company remodeled its plant to include the acid wash. Since this date I have not heard of any evidence of toxicity or any bad results from the use of nitrous oxid in Cleveland or vicinity. These two plants manufacture all the gas sold in or about Cleveland.

The chemical work to identify the particular poison or poisons which have caused all the troubles has not been done. We know only that it is removed by the acid wash, and that it is found in the acid in the form of ammonium salts, which is consistent with the belief that it is one of the hydrazins or hydroxylamins. The problem of isolating the particular poisons by chemical means is too difficult to look attractive, now that the practical results have been attained without such work.

For the simple purpose of preventing commercial monopoly, applications for patents on a new method of separating the nitric oxid from the nitrous oxid, on a new wash jar devised, and on a process of removing the bulk of the impurities by condensing the 45 per cent. of water in the crude gas, as well as on the process of removing traces of alkaline substances, have been made. All patents issued will be held by the hospital to guarantee the unrestricted use of the apparatus and the methods covered by them.

To our mind the first problem has been solved. Nitrous oxid can be manufactured in sufficient purity to be absolutely safe for use in anesthesia. We are not yet quite sure about the second problem. Lakeside can now manufacture such gas as a routine, and safely, but the walls and ceiling of our room still bear marks made by pieces of bursted retorts, and our employees have not forgotten the fumes which repeatedly filled the corridors "from the gas plant." It is never entirely safe to place a pot containing a nitrogenous and an oxidizing substance over a fire. Many defects in the models of apparatus and troubles in the handling of the purification process have been overcome, some nonessentials have been eliminated, and safety devices have been added, so that it now seems to us entirely reasonable to expect a good chief engineer to supervise a similar plant and train a helper to run it; yet it remains to be demonstrated.

The cost of building a new plant for the manufacture, purification and handling of nitrous oxid similar to the one now in use at Lakeside would be about $2,700, and it would require about 600 square feet of

floor space. This figure includes the cost of apparatus for liquefying the nitrous oxid and for filling small cylinders. The cost of apparatus for the handling of oxygen (purchased in large cylinders) outside the operating room, and for delivering it in pipes parallel with the nitrous oxid at the same constant pressure is about $300. This includes apparatus for filling small cylinders from the large. The cost of running the pipes for the nitrous oxid and oxygen to the operating rooms would be additional, and would vary with distance and difficulties. It would be the same as the cost of running water pipes the same distance.

COST

From the first there has been a gradual reduction in the cost of nitrous oxid-oxygen anesthesia. Three years ago our costs were running about $10 per hour, divided into $3 for anesthetists' salaries and $7 for the gases and incidentals. The present figures are $2.50 for anesthetists and $1.57 for gases and incidentals, making a total of $4.07. In order to present the details of cost as clearly as possible, I have prepared two series of the detail of six consecutive months, each with averages. The first series ends with March, 1914, and the second with April, 1915. Dur-

TABLE 1.—AMOUNT OF GASES USED, FIRST SERIES

	No. Gallons N_2O from Plant	Cost of N_2O from Plant	Cost of N_2O per 100 Gallons	Total Gallons N_2O Used	Av. No. Gal. N_2O Used per Hour	Av. No. Gal. O_2 Used per Hour	No. Hours of Anesthesia	Cost per Hour for Anesthesia
Oct., 1913....	54,346	$370.02	$0.59	69,646*	470	170	148	$6.18
Nov., 1913....	44,601	262.30	.58	61,401*	464	170	132:10	6.63
Dec., 1913....	43,296	306.95	.70	44,596*	398	139	112:6	6.76
Jan., 1914....	61,176	328.08	.53	62,376*	243	43	256	3.05
Feb., 1914....	35,478	243.60	.68	36,178*	262	88	138:44	4.80
Mar., 1914....	52,152	296.33	.56	59,652*	326	56	182:59	4.38
Average....	48,508	$292.88	$0.61	55,642	361	111	161:42	$5.30

* Small cylinders purchased in this period.

ing the first series we purchased the small cylinders used, so that the amount of gas manufactured was not the total amount used. In the second period we compressed our own nitrous oxid for small cylinders, and filled small oxygen cylinders direct from the large. The filling of the small oxygen cylinders from the large is distinctly a saving. In Cleveland, the price of oxygen in small cylinders is just seven and one half times as much per unit volume as in large cylinders. This is due to the fact that the large cylinders, at least, are oxygen from the Linde process, which is apparently of perfectly satisfactory quality. The small cylinders are either refilled or oxygen from the old process. The figures for the amounts of the gases used are from the storage tanks in the basement, and therefore account for all leaks, accidents and wasted gas. To determine the amount of gas used per hour, the total amount drawn from these tanks was divided by the total number of hours of anesthesia reported in the month. The length of anesthesia reported is the actual time that the gases are flowing.

The most striking figure of these tables is the drop in the amount of nitrous oxid used per hour from 361 to 161 gallons. This and the corresponding drop in the oxygen figures were caused by two factors developed and installed between the two series. The first was the attachment of meters measuring the gas going to each machine so that the anesthetists could note the comparative amount of gas used in any period. Our gas man repeatedly made minute readings during the anesthetics given by our three anesthetists, until we could recognize the anesthetist from a chart of these readings. We demonstrated the fallacies of the rate of flow dials on the machines, and the inaccuracy of the meter readings themselves on account of the variations in the pressure. The result of this work was a clear understanding by the anesthetists of when and how they wasted gas. The wasting became less. Our

TABLE 2.—AMOUNT OF GASES USED, SECOND SERIES

	No. Gallons N_2O Made	Cost of N_2O	Cost per 100 Gal.	Av. No. Gal. N_2O Used per Hour	Av. No. Gal. O_2 Used per Hour	No. Hours of Anesthesia	Cost per Hour for Anesthesia
Nov., 1914.....	27,192	$216.85	$0.79	153	85	177:20	$3.97
Dec., 1914.....	31,002	221.20	.71	172	53	180:17	3.46
Jan., 1915.....	18,424	123.52	.67	153	62	119:26	4.71
Feb., 1915.....	18,582	125.52	.69	166	107	111:39	4.81
Mar., 1915.....	25,362	169.60	.65	158	54	163:44	3.41
Apr., 1915.....	26,071	175.40	.67	162	60	160:43	3.75
Average.....	24,539	$172.68	$0.70	161	70	152:12	$4.02

meters were secured with difficulty and at considerable expense, because the high pressure required special construction. But since then one firm, at least, has put suitable meters for this use on the market, and makes a gas machine with meters as an integral part. The second fact was the lowering of the pressure in the pipes leading to the gas machines from 35 to 5 pounds. This pressure is, or should be, reduced by the machines to practically atmospheric pressure. One of the makes of machines that we use handled the lower pressure equally well, but the other did not until we enlarged the ports. It was soon noted that the lower pressure was much easier for the patient as well as more economical. The anesthetist can turn on all the gas the patient can breathe without develop-

TABLE 3.—DETAIL OF THE COST PER HOUR

	First Series	Second Series
Nitrous oxid	$2.50	$1.12
Oxygen	.23	.16
Anesthetists	2.45	2.50
Incidental items, repairs, etc.	.40	.24
Total	$5.30	$4.02

ing tendency toward positive pressure in the lungs. Expiration can take place against the gas flow, checking it without effort, and there is always a sufficient volume of gas available for rapid inspiration without developing a negative pressure and effort. The gas flows freely in inspiration, but is automatically checked in expiration.

The increase in the cost of manufacture in the second series is due entirely to the lesser amount made and the constant overhead expense for the salary of the man who runs the plant and for other fixed charges. No items of interest or depreciation, but all repairs and replacements are included. In each series, the cost of ammonium nitrate was the same.

The recent sharp rise in the price of the nitrate is caused by the increase in the cost of nitric acid due to the war.

ADVANTAGES

The advantages of this anesthetic which the patient most highly appreciates are the facts that the gases are not disagreeable or irritating, and that consciousness is lost so promptly. To the patient the starting of the anesthetic is the beginning of the operation, and the sooner consciousness is lost, the better for many reasons. Crile has found that it protects the brain cells from shock more than other anesthetics: especially so, if combined with a little morphin. Following the operation, the patient is not called on to endure patiently discomfort from the irritation of ether in the eyes, throat and bronchial tubes, or on the skin. There are some to whom a greater advantage seems to be the fact that they are not likely to talk or act foolish when coming out from the anesthesia.

In the operating room, gas has an advantage over ether anesthesia because the patient gets under its influence more quickly, saving time, and because at the close of the operation the patient is conscious and can be returned to his room as easily as any conscious patient. The familiar scenes of delirium in the second stage of ether, with orderlies holding the struggling patient on the table and the surgeon trying to boss the job and at the same time keep sterile, are entirely eliminated. The ether patient who starts vomiting in the corridor on the way back to his room or ward made more trouble than we realized. Every one took the distressing scene as an occasional necessity, but it certainly never made it any easier for others to face the ordeal of an operation.

The advantages of nitrous oxid anesthesia are best appreciated in the wards, and it is here that the hospital gets back some of the initial cost. It costs a hospital money to care properly for a noisy vomiting ether case in a side room, not only in the nurses' time devoted to the case, but in the effect on the other patients. Comfortable ward patients are as curious as children, and the full details of the ether room scenes never fail to reach the newest patient, creating in him added apprehension and dread. It costs money to have house doctors and head nurses busy explaining away the apprehensions and dread of an operation, and to keep the courage up even after the surgeon has convinced as to the necessity and comparative safety of the impending operation. The return of a patient to his ward bed conscious and comfortable directly from the operating room gives a very different impression as to an operation from that given by a return after a day or so spent in the side rooms. Every patient knows that side rooms are for things the others must not see. It costs money to keep a private room patient convinced that water is withheld for his own good, and convinced kindly and tactfully enough to dispel the suspicion that it is but a rule and red tape that should not apply in his case.

With pure gases, vomiting is extremely rare: when morphin is used it comes about as must be expected from the use of this drug independent of anesthesia, and it resembles morphin vomiting in type. Pneumonia is apparently much less frequent with nitrous oxid, and the same is true of postoperative shock; but the cause of either of these in any given case is so obscure that it is hard to fix responsibility. Since we began the use of nitrous oxid, there have been many other changes and improvements in the care given our patients which should have an effect on the pneumonia and the surgical shock percentages. We are certainly getting much less postoperative shock and pneumonia than formerly, and nitrous oxid has undoubtedly contributed largely to this change.

Many patients, especially minor operative patients, are able to leave the ward much sooner. Not only is the day in the ether room lost, but it often requires another one in the ward to bring back the expended energy. The cost of many extra days' treatment saved can properly be credited against the gas anesthesia bill.

ADMINISTRATION

Under the administration of nitrous oxid, this paper can mention only a few observations of a skeptical hospital administrator who has watched the development of skill in its use. More than half of nitrous oxid anesthesia was once carbon dioxid asphyxia: blue-black patients were the rule. Now we know that cyanosis at any stage of the anesthetic is evidence either of poisons in the gas or of faulty, incompetent administration. It is not necessary, and is always harmful. Enough oxygen should be given at all times to preserve normal color, but more is a waste. Perfectly normal color can be maintained while the patient is presenting all the symptoms of asphyxia, including convulsions. For this reason, rebreathing to any extent is dangerous, and is not justified by the gas saved. Without the color to guide, the percentage of carbon dioxid in the alveolar air may mount unnoticed to levels dangerous through its effect on the brain centers.

The lesser degree of muscular relaxation in nitrous oxid anesthesia is sometimes annoying to the surgeon. It can be overcome by the mixing of a little ether vapor when the relaxation is needed, and all machines are equipped to do this. The results in the matter of losing the advantages of the nitrous oxid anesthesia are in exact proportion to the amount of ether used.

Proper appreciation of nitrous oxid as an anesthetic and an analgesic has been delayed by the fact that it could be used by the unskilled without horrible results traceable directly to the lack of skill, and by the fact that it was mentally classed by anesthetists with ether, chloroform and ethyl chlorid as an anesthetic, and its effect expected to correspond with that class. Temporary harmless conscious analgesia for dentistry, childbirth and other minor surgery may seem too good to be true, but it is at hand. Analgesia and unconsciousness without a profound or lasting impression on the central nervous system is the ideal for major surgery. Nitrous oxid in skilled hands can produce both, in unskilled hands, neither.

New Possible Source of Vanilla.—According to correspondence from J. F. Boomer, Manila, in *Daily Consular Reports*, a new vanilla-producing plant has been found in the Island of Mindoro, Philippine Islands, called *Vanilla ovalis*. The vanilla of commerce at present is the product of *Vanilla planifolia*. The plant is found both in open ravines and in the deep forest, but is not plentiful. The Bureau of Education of the Philippines is investigating the possibility of propagating the plant and developing it as a source of vanilla extract for trade purposes. The plant has roots similar to those of the amlong, but are superior, as they are pure white and require no bleaching. The roots are used for basket making.

PELVIC INFECTIONS AND THE APPLICATION OF DRAINAGE

L. G. BOWERS, M.D.
DAYTON, OHIO

The subject of pelvic infection should not be discussed without emphasizing the fact that the condition is to a very large degree preventable. When it is recognized that the majority of cases are due to gonorrhea, and that the next most common causes are abortion, especially induced abortion, and labor, it is obvious that appropriate education of the laity and the profession would do much to eliminate this complication. We should therefore lose no opportunity to teach the public that gonorrhea is a very serious disease and that the production of abortion is a dangerous practice, and we should try to make the general practitioner realize that labor is a surgical procedure and requires strict asepsis.

While it is true that the gonococcus is the primary cause of the majority of pelvic infections, it must be borne in mind that it is a single infection for a very short time, usually not more than two or three days, and that the nature of the mixed infection is of much importance. When the complicating organism is the staphylococcus or colon bacillus, the outlook is usually favorable, but when it is a streptococcus or pneumococcus a very guarded prognosis is necessary. It is essential, therefore, to the intelligent treatment of these cases that whenever drainage is performed, a culture be made and the exact nature of the infection determined. The identification of the infecting organisms not only aids us in the prognosis, but makes possible the proper application of specific therapy. In cases complicated by the staphylococcus or colon bacillus, an autogenous vaccine, administered daily in small doses, is often of great value. When the streptococcus is present the antistreptococcus serum may be used to advantage. Fifty c.c. should be given every six hours until a favorable reaction occurs. In my observation these measures are too often not resorted to early enough to give us the best results. Particularly in cases in which the abdomen has been soiled by the rupture of a tube in operation it is much wiser to give a large dose of serum as a prophylactic than to wait until an infection has developed.

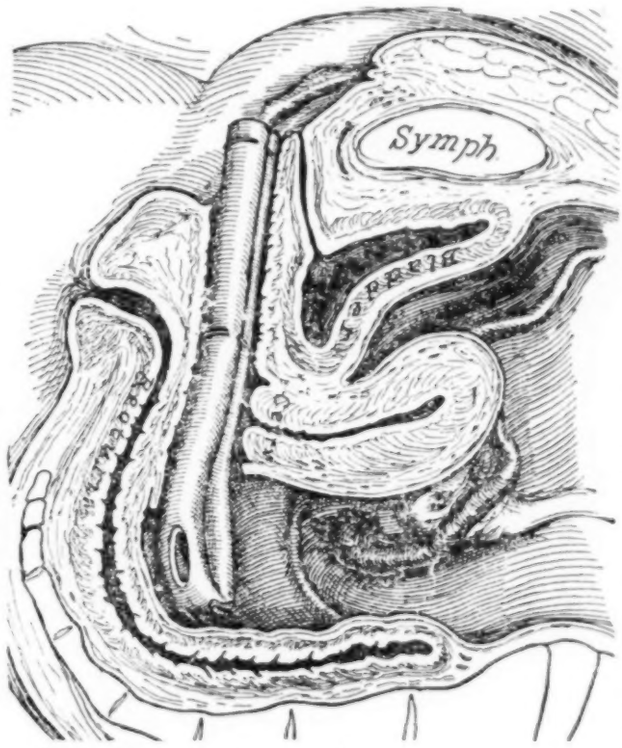

Fig. 1.—Double tube drain in position in posterior culdesac.

As these cases are usually first seen by the family physician, we should, so far as possible, teach him their proper management. In my observation, the medical treatment of acute cases is usually too vigorous. For instance, a resort to frequent and continued purging often defeats Nature's effort to limit the infection by walling it off. In numerous cases I have found the doctor much exercised over the failure of his efforts to produce free catharsis. The abdomen is distended and vomiting is frequent, and he thinks he has obstruction. The fact is that Nature has splinted the intestine to limit the spreading of the infection, and therefore the doctor's medicine is ejected. The use of morphin, particularly before a diagnosis has been made, cannot be too strongly condemned as it checks the secretions, increases the vomiting and obscures the diagnosis. A liberal use of the ice-bag to the abdomen will usually relieve the pain. The stomach should be kept empty of both water and food. If vomiting is present, stomach lavage usually relieves it and puts the intestines at rest. Thirst can be relieved by frequent slow saline enemas. The important thing is to disturb the patient as little as possible.

The chronic cases are, unfortunately, very often subjected by the general practitioner to even more serious mistakes in treatment. The use of tampons, douches, suppositories, posture, etc., gives only temporary relief, and the repeated acute congestions and chronic inflammatory processes lead to gross pathologic changes. The resulting physical distress causes great disturbance of the nervous equilibrium with the development of various neuroses and occasional psychoses. Even after radical operation these conditions may persist for a long time for it is well known that the nervous tissue, being the most highly organized, is the slowest to repair. The probability that an early, careful radical operation would restore these patients to a practically normal condition should prevent persistence in purely palliative treatment.

In the surgical treatment of pelvic infections, the judgment gained in long experience is necessary to the proper application of whatever rules may be formulated. To operate during the storm of acute pelvic infection spells disaster many times. Usually we must give Nature time to limit the infection by protective adhesions and to develop a specific immunity; but if the patient is seen early, and the diagnosis is reasonably positive, it may be good practice to operate immediately. A history of previous attacks will aid materially in determining the best course to pursue. A beginning general peritonitis, as evidenced by rapid pulse, high temperature and general or local abdominal rigidity or tenderness, usually contraindicates early surgical interference.

There are certain principles of drainage which are almost axiomatic and failure to follow them results

in injury to the patient, if not death. The most important of these principles is that the lowest level of a cavity should be the highest point for the insertion of drainage. It follows, therefore, that the culdesac should always be the point for drainage in pelvic cases, rather than uphill drainage through the abdominal wall. There are, however, two exceptions to this rule. The first is the insertion of a small wick drain in the abdominal incision as an indicator of hemorrhage following myomectomy. The second is when the infection is walled off in front of the bladder and attached to the anterior abdominal wall. This type will be discussed later.

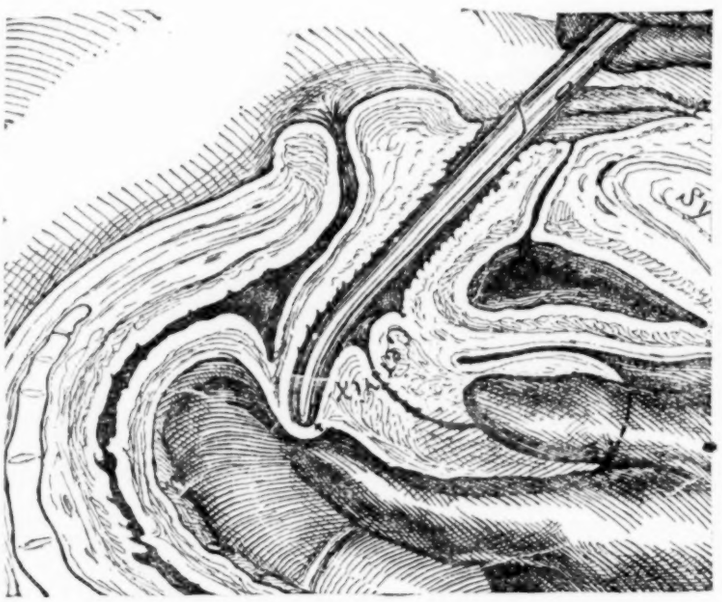

Fig. 2.—Puncture of vaginal fornix, bimanual method.

As has been said, most acute pelvic infections are gonorrheal in origin. As a rule they are best treated in a palliative way, as experience has taught that, within certain limits, they run a definite course. Walling off the infected area and the development of immunity seems to be Nature's way of handling the situation, and early surgical interference may only serve to spread the infection. Those cases which develop cellulitis accompanied by a distended culdesac are best treated by posterior vaginal puncture and the insertion of the double drainage tube for a few days. A rather stiff rubber tube is bent on itself in the middle, a linen stitch is placed near the ends to hold the two halves parallel, and a good-sized opening is cut in the outer side of each half just below the bend. The advantages of this tube are that it has a smooth, blunt end for insertion through the puncture, it gives free drainage and allows irrigation with a return flow. Figure 1 shows this tube in position in the culdesac. It is left usually from five to seven days. In case the culdesac opening becomes clogged or contracts sufficiently to prevent free drainage after the removal of the tube, the opening may be stretched with a uterine dressing forceps and the cavity irrigated with a mixture of one dram of tincture of iodin to a pint of sterile water. A Leonard douche is the most useful and convenient instrument for irrigating the cavity.

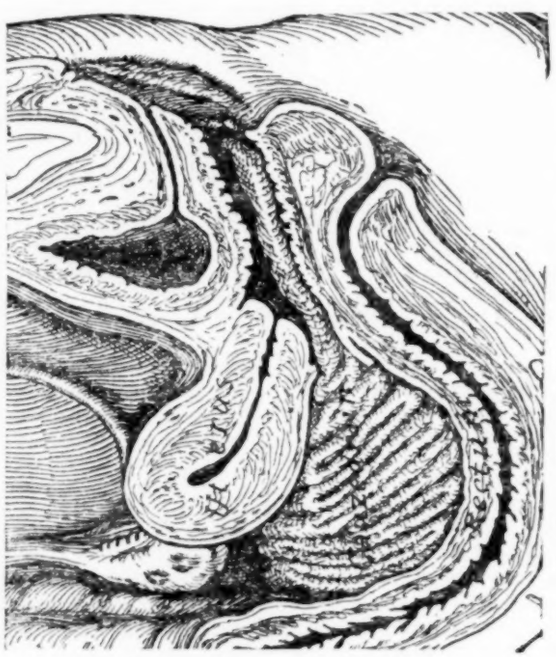

Fig. 3.—Gauze drain in posterior culdesac.

The Fowler position is a very important aid in securing thorough drainage in these cases and should always be employed. When, for any reason, the Fowler position cannot be used, the drainage will be greatly improved by elevating the head of the bed about 10 inches.

One caution should be given for the performance of culdesac drainage in these acute cases. The broad ligament should be explored through the opening with the finger and any adhesions that may be holding pus should be broken up. Frequently on such exploration one finds walled-off pus cavities which, when broken into, will liberate as much pus as the first incision. I have had the experience, when not taking such precaution, of having to return my patient to the operating room because the pulse and temperature did not return to normal. After breaking up the inflammatory wall and liberating the pus which was undoubtedly present at the time of the former operation, the temperature and pulse immediately became normal and rapid convalescence ensued. I feel quite sure that if these precautions are taken, a number of cases will be saved a secondary operation following drainage of the culdesac. I am firm in the belief that free evacuation of every pus focus in the pelvis will give the tube such free drainage at the fimbriated end that it will not be likely to cause trouble later.

Posterior vaginal puncture with tube drainage usually gives immediate relief in the acute cases, without any surgical risk. Most of the cases so treated result in apparent cure and further operative interference is unnecessary, or may be refused by the patient. If there is a history of frequent pelvic infections, more radical measures are called for than culdesac drainage. If the tubes remain enlarged and tender and the patient complains of constant or periodic pains of greater or less intensity, a radical operation

is indicated. This operation can be performed more safely during the interval than during the acute attack, unless the patient is seen early. It is generally best to wait from two to three weeks after the subsidence of the acute attack and the return of the pulse and temperature to normal. By so doing time is given for the absorption of the exudate, thereby lessening the amount of adhesion. The inflammatory wall also becomes stronger, thereby minimizing the danger of dissemination of the infection. All of us have had the misfortune of easy rupture of the tubes in the dissection, when probably a few days recuperation would have avoided such a complication. Some operators state that a leakage during a pelvic operation is rarely followed by complications, but in my experience this is not the case. This is shown by the fact that a number of years ago, when pelvic gravity drainage was not so frequently used as at present, we had many more complications and a much higher mortality.

I advocate most strongly the necessity of a complete salpingectomy in these chronic cases. A number of very good operators still tie off the tube *en masse* at the cornua of the uterus, leaving at least three fourths of an inch of the stump of the tube. These stumps frequently cause as many symptoms of the old salpingitis as were present before the operation. Many times the trouble is not relieved, the large stump causes the formation of new adhesions and the trouble is actually increased. A wedge-shaped piece, including the entire stump of the tube, should be cut out of the cornua and the edges approximated and whipped over. It should be said, however, that in most of the chronic cases there is a metritis requiring a hysterectomy for complete cure. My own experience has been that it has been nearly always the operation of choice.

In cases of pyosalpinx of the chronic type in which there has been no evidence of an acute exacerbation for a long period, and if the patient's condition is good, no drainage is needed in case of rupture during the operation, as the contents of the tubes are usually sterile; but if the patient's condition is below par or if there is the least suspicion of an active infection, it is good practice to insert the culdesac pelvic drain.

In all cases in which drainage is indicated following a radical operation for pyosalpinx, I prefer a silver nitrate or iodoform gauze culdesac drain. The drain should be made by folding a piece of gauze 1 yard wide and 1½ yards long into a 1½ inch strip. In cases in which the drain may be needed, the vagina should be prepared before operation, by scrubbing and thorough rinsing with sterile water, drying and painting, through a speculum, with equal parts of tincture of iodin and alcohol. When the drain is to be introduced, the left hand is encased in a long glove, and the vulva having been surrounded with sterile towels, the operator inserts a long forceps, curved on the flat, into the vagina, and with the right hand in the abdomen, locates the proper point for puncture of the culdesac by bimanual touch, as shown in Figure 2. The puncture is then made by making pressure on the forceps or, preferably, by making an incision over the point of the forceps with a scalpel held in the right hand. The blades of the forceps are then pushed through the incision and the nurse is instructed to hold the handles on the outside and keep the blades open until the end of the drain is placed between them. The blades are then closed and the nurse gently withdraws the forceps until the end of the drain appears at the vulva. The operator then changes gloves and the remainder of the drain is placed in folds posterior to the uterus, as shown in Figure 3. This arrangement of the gauze facilitates drainage and subsequent removal is easy. This bimanual method of introduction enables the operator to make the puncture rapidly and accurately, at whatever point he may elect.

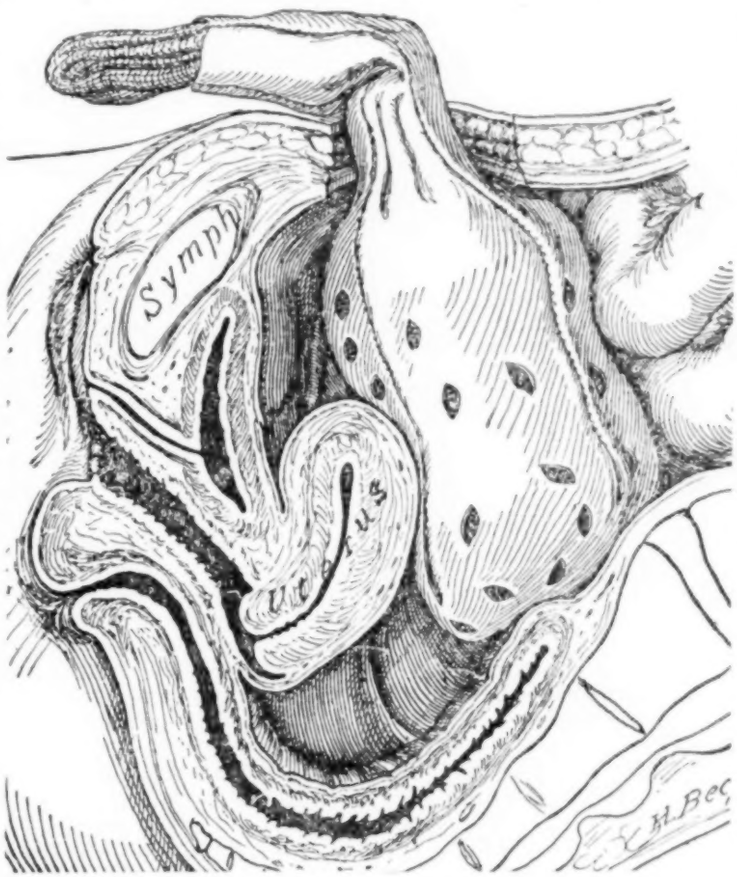

Fig. 4.—Abdominopelvic bunch drain in position.

It had been my practice to remove the culdesac drain after five days, at one sitting, but after reading the plan advocated by Wertheim's assistant, I decided to try it and in about fifty consecutive cases have followed his technic. This process was to remove half the drain in five days, one half of the remainder on the seventh day, and the rest on the ninth day. As 90 per cent. of these cases developed an infection of the abdominal wound, I abandoned the method. In my judgment, the infection of the abdominal wound was caused by a collection of exudate above the gauze. As the gauze became saturated with exudate, drainage was impeded or entirely stopped, so that before the gauze was entirely removed, sufficient backing up had occurred to produce the infection. By complete removal at the end of five days, this danger is

averted. It was further noted that the cases drained much longer when the drain was removed by the three-step method than when it was entirely removed at the end of five days. Since returning to my usual method of removing the entire gauze drain on the fifth day, I have had in about the same number of cases but one case of abdominal wound infection.

The administration of gas for the removal of the drain is much appreciated by the patient. It saves the patient pain and shock and relieves the operator from the charge of being rough and heartless.

When the infection is anterior to the uterus and attached to the anterior abdominal wall, the bunch drain described by Mikulicz and modified by Rovsing by using a rubber bag covering is very useful. It is applicable sometimes also to cases of pus appendicitis, incompletely walled off, in which the infection extends into the pelvis and in front of the uterus. This method has the double advantage of giving excellent drainage and also of excluding the clean intestine and omentum from the infected area.

This drain is shown in Figure 4 and consists of an oiled silk bag filled with gauze. The bag is 5 inches in diameter when inflated, and 10 inches long. The oiled silk cloth is cut in proper shape and stitched on a sewing machine and then inverted so as to turn the edges inside. The drainage openings are then snipped with scissors at intervals to correspond with the area to be drained. The drain inside the bag is made by folding a piece of gauze 1 yard wide and 3 yards long into a 1½ inch strip. Beginning on the second day, a little of the gauze is withdrawn daily, and the entire bag with the remaining gauze on the fifth day.

CONCLUSIONS

1. Preventive measures should be promoted by instruction of the public and by a better technic.
2. The infecting organism should be determined and specific therapy employed when indicated.
3. The preoperative treatment should not be too vigorous.
4. When drainage is desirable, it should, with rare exceptions, be through the culdesac, and it should be aided by posture.

A Sanitary and Satisfactory Substitute for the Free Lunch.—In some regions of our large cities inhabited by the poorer classes, there are few eating places except those connected with saloons. The food is badly cooked, indigestible and unpalatable, and often the meals served in homes are not much better. Moreover, home cooking done over a hot fire in the kitchen that serves also as a family dining room means acute discomfort to the whole family in summer. The physical and social results are both bad. Public kitchens which dispense good cooked food at low cost have been organized in a few cities to meet the needs of the situation. Holland Hudson describes in the *Modern Hospital* such a kitchen (said to be the first in New York) under the direction of the New York Association for Improving the Condition of the Poor. The longshoreman can now obtain a substantial meal of well-cooked food, served on a table from clean dishes, at less cost than the "pony of red-dog whisky" which accompanies food at the free-lunch counter. Housewives can procure hot cooked food to serve at home. The kitchen is self-supporting. A high sanitary standard is maintained. All employees are compelled to pass a rigid physical examination, and no one is employed who has any communicable disease. The kitchen is well screened from flies, and recently received a score of 100 points from the department of health. A branch kitchen is soon to be established.

THE WASSERMANN TEST IN THE MEDICAL DISPENSARY*

JOSIAH J. MOORE, M.S., M.D.
CHICAGO

Any estimation of the prevalence of syphilis in a community by means of clinical symptoms alone is hazardous. The protean manifestations of the disease, the latent type of both congenital and acquired forms, and the denial of a specific history, either through ignorance or wilfully, render its diagnosis extremely difficult in many instances. In recent years, however, the introduction of the Wassermann reaction has aided, in a marked degree, the proper classification of many heretofore obscure conditions.

To be of greatest value in the diagnosis of a disease, the specific test for that disease, whether for laboratory or clinical purposes, must be practically constant. The thousands of Wassermann tests made on patients suffering from syphilis give ample proof that the test is practically constant for this condition. Various estimates give from 60 to 100 per cent. positive reactions in different stages of the disease. Less than 0.5 per cent. of conditions other than syphilis react positively; these usually give a negative reaction in a short time with no syphilitic treatment, or occur in diseases which are easily differentiated from syphilis. Therefore, in the Wassermann test we have a fairly reliable serologic means of estimating the prevalence of syphilis.

Based solely on clinical symptoms there are the oft-quoted figures of Erb, who gives 12 per cent. of syphilis in the adult population of Berlin, and those of Fournier, who states that 15 per cent. of adult Parisians have the disease. In the last three years Wassermann reaction surveys in hospital, asylum and municipal laboratories are giving us a clearer insight into the amount of this disease among certain groups of the community. Churchill[1] found that 28 per cent. of 101 children examined at the Children's Memorial Hospital of Chicago gave a positive reaction. In 111 cases admitted to the Children's Hospital in Boston, Lucas[2] found 31 per cent. infected. Browning[3] found 14 per cent. of syphilitics in 331 children in the outpatient department of a children's hospital of Glasgow. Holt[4] of New York found 6 per cent. of infected children in his series.

Routine Wassermann tests are now made in many insane asylums. A few examples will show the high percentage of positive results on these patients. Of 600 inmates of the Oregon Insane Asylum, Watson[5] obtained a positive reaction in 20 per cent. with only 5 per cent. giving positive histories. Ivey[6] found 20 per cent. of the women and 25 per cent. of men infected in over 700 negro insane of Alabama. In 122 cases of nervous disease in the wards of the Western Infirmary of Glasgow, Browning[3] obtained 41 per cent. positives. In 104 prostitutes and 109 men classified as tramps, Browning found 100 per cent. of infection.

The general medical dispensary affords a medium by which we come in close contact with a certain

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* From the Department of Experimental Medicine, University of Illinois.

1. Churchill: Tr. Am. Pediat. Soc., 1912, xxiv, 149.
2. Lucas: Boston Med. and Surg. Jour., 1913, clxix, 423.
3. Browning: Brit. Med. Jour., 1914, i, 77.
4. Holt: Am. Jour. Obst., 1913, lxvii, 1228.
5. Watson: Northwest Med., 1910, ii, 103.
6. Ivey: Med. Rec., New York, 1913, lxxxiv, 712.

class of persons in whom, through poverty, deficient education and mental instability, we might expect a higher percentage of syphilis than in the average of the community. For the last several months Wassermann reactions have been made as a routine test on practically every person attending the medical dispensary clinics of the University of Illinois College of Medicine, Chicago. According to the classification employed at this dispensary the patients attending the genito-urinary, gynecologic, pediatric, nervous, dermatologic, or surgical clinics are not included in this list. It embraces only those patients treated in the medical clinic.

In the technic of the test itself we employed from two to five antigens, never less than two. The antigens were the acetone insoluble fractions of beef and human hearts obtained from several different sources, including three made by myself; also alcoholic extracts of syphilitic liver. No cholesterinized antigens were used. The antigens were titrated in the usual way so that 0.1 c.c. of a one tenth dilution was employed in the test.

Both antichicken and antihuman hemolytic systems were employed, the former in all cases, the latter in about 25 per cent. In all tests in which both systems were used the results were identical. Washed chicken corpuscles were made up in a from 2 to 5 per cent. suspension and to this was added twice the titer of hemolysin. For complement both fresh guinea-pig serums and serums allowed to stand for seventy-eight hours in the ice-box were used. These gave similar results. The serum was diluted to 8 per cent., that is, 1 c.c. guinea-pig serum was added to 11.5 c.c. of sterile normal salt solution, and this titrated before each series of tests. Twice the complement titer was employed in the test.

All patients' serums were heated to 56 C. (132.8 F.) for one-half hour and used in amount of 0.1 c.c. After the patient's serum, the antigen and complement were added to the test tubes, the total volume was made up to 1 c.c. by the addition of normal salt solution and then incubated for one hour, after which 1 c.c. of sensitized chicken corpuscles were added and the whole again incubated for one hour, at which time the readings were made.

In those tests in which human corpuscles were employed we followed the method described by Noguchi.[7]

The Wassermann reaction was performed on 418 patients. These are classified in Table 1.

Fifty-six, or 13.4 per cent. of the total number reacted positively. Twelve were weakly positive or doubtful; eight of these were undoubtedly due to treatment. Omitting those who gave a weak reaction, and presented no history or other symptoms of syphilis, and adding those who reacted negatively but who had had the disease, we have 78, or 18.6 per cent. of this group who have suffered or are now suffering from syphilis. This at first glance is a high percentage, but when we consider that we are dealing with the ailing members of a class of society which are more or less unfortunate in the struggle for existence, the figures will not appear so high.

As to sex, of 89 women, 16, or 18 per cent., gave positive reactions, while 40, or 12.2 per cent. of 329 males were positive. This higher percentage of positives among women might lead one to believe that the disease was more generally prevalent among females than males. This, however, would be a false impression. While the majority of the women having this disease are found in the medical clinic, most of the men having syphilis attend other clinics, especially the dermatologic and genito-urinary.

The difficulty of diagnosis of syphilis in the medical dispensary, as in all other branches of practice, is increased by lack of adequate history and especially by the obscure manifestations of the disease. The vague answers given to questions relative to the history of the infection are of little value. In twenty-eight of the fifty-six positives a definite history was given, and this was obtained in many cases after the reaction was reported positive. On the other hand, many of the negatives gave a history simulating an earlier specific infection. The facts are forcibly presented in an article by Krumbhaar and Montgomery,[8] who, in a series of Wassermanns on 108 dispensary patients obtained forty-eight frank positives, seven doubtful and fifty-three negative. Of the positives, 35 per cent. gave negative histories and a large proportion of positive histories were obtained from those giving negative tests.

TABLE 1.—CLASSIFICATION OF FOUR HUNDRED AND EIGHTEEN CASES IN WHICH THE WASSERMANN TEST WAS PERFORMED

	No. of Cases	Males	Females
Wassermann negative	350	278	72
Syphilitic	14	11	3
Nonsyphilitic	336	267	69
Wassermann weakly positive	12	11	1
Syphilitic	8	7	1
Syphilitic?	4	4	0
Wassermann positive	56	40	16
Congenital	5	2	3
Secondary	4	1	3
Tertiary	47	37	10
Total	418	329	89

A more important cause of incorrect diagnosis is the lack of symptoms pointing toward the syphilitic infection. Thus the tentative diagnosis at the first visit was other than syphilis in a majority of the positive cases. As in all first class medical dispensaries the first visit diagnosis is often made before all the laboratory returns are obtained and before a thorough physical examination is completed. Occasionally, for the primary diagnosis, a pronounced symptom, as constipation, myalgia or anemia, was given, until further investigation could prove the cause. But even with a complete physical examination the symptoms often were so vague that the diagnosis of syphilis could not be made from the clinical findings alone. Naturally it is in these cases especially that the Wassermann test is invaluable.

The tentative diagnosis of thirty-two of the fifty-six positives was other than syphilis. Findings similar to these were made by Krumbhaar and Montgomery, who state, "Among the forty-eight positive cases nineteen were tentatively diagnosed under other headings at the first visit, and in a large proportion of the remainder a good deal of uncertainty existed as to the specific nature of the cases."

In Table 2 the tentative diagnosis and the final diagnosis are presented. Frequently but one visit was made by the patient and the result of the Wassermann test could not be followed up. In a few of those cases

7. Noguchi, Hideyo: Serum Diagnosis of Syphilis, Philadelphia, J. B. Lippincott Company, 1910.

8. Krumbhaar, E. B., and Montgomery, C. M.: Syphilis and the Medical Dispensary, THE JOURNAL A. M. A., Jan. 24, 1914, p. [illegible].

in which the Wassermann is weakly positive the final diagnosis of syphilis is questionable. In some instances two diseases were actually present, the syphilitic symptoms being either quiescent or the manifestations of the accompanying condition being so prominent that syphilis was not considered; in others the symptoms might have been caused by a variety of conditions but with a positive Wassermann and favorable response to specific treatment they undoubtedly were due to syphilis and are so designated in the final diagnosis.

The value of the Wassermann reaction can best be demonstrated by the citation of a few cases. In Case 3, in a painter, plumbism was confirmed by laboratory findings. It is reasonable to suppose that this condition may produce a plus reaction, but tests in similar cases reacted negatively. In Case 26, the patient being the wife of the patient in Case 3, there was a history of two abortions and a positive test. Case 10, in a man of 50, was recognized clinically to be carcinoma of the stomach with liver metastases until three positive Wassermanns led to the employment of potassium iodid and mercury therapeutically; the patient improved remarkably, the liver decreased in size, the jaundice cleared, and the abdominal tumor in the region of the stomach disappeared. Case 18 resembles Case 10 closely in that several reactions were positive, but the treatment produced only a temporary improvement. The patient succumbed to the disease in another city. We learned that a necropsy was performed and carcinoma of the stomach found, but we were unable to obtain a report of the other findings. The diagnosis was carcinoma and syphilis.

In Case 31, a girl of 22 had an enlarged thyroid, pulse of 140 and other symptoms of exophthalmic goiter. She had been treated for this disease for over two years at various hospitals and dispensaries, with no improvement. Wassermann tests were persistently positive. After being on specific treatment for four months the pulse rate was lowered to 90, the goiter had reduced in size, and the patient has now resumed her work as an office girl. The Wassermann test, however, is still positive. In connection with this case it is interesting to know that a brother (Case 7) had a peculiar train of symptoms which led to several diagnoses. The positive Wassermann led to a final diagnosis of syphilis, or rather of juvenile tabes. I have learned that under specific treatment the boy is now apparently well. Wassermanns made on the mother and two other children were negative. We could not obtain a test on the father, but learned that he had been a drunkard and had a "bad disease," presumably syphilis. The clinicians concluded that both these cases were of congenital origin. I am not attempting at this time to explain the negative reactions of a portion of the family and the positive reactions of the others.

Six of the fifty-six positives had tuberculosis with syphilis. The criticism may be made that tuberculosis is one of the conditions that occasionally give a positive reaction. In this series over thirty patients suffering from tuberculosis reacted negatively. Besides these we have another series of over fifty tuberculous cases in which the tests were negative, so that whenever a positive test was repeatedly obtained in a tuberculous patient the diagnosis of syphilis was made. The same doubt may be expressed with regard to the patients with carcinoma. A large series of malignant conditions have reacted negatively, however, leading us to assume that whenever persistent positive Wassermanns are present in cases of malignant tumors or in those diagnosed as such, either syphilis or syphilis with carcinoma is present.

TABLE 2.—CLASSIFICATION OF POSITIVE WASSERMANN REACTIONS

No.	Tentative Diagnosis	Final Diagnosis*	History of Syphilis	Wassermann Test †
1.	Pulmonary tuberculosis	Pulmonary tuberculosis	..	+
2.	Syphilis		0	+
3.	Lead poisoning	Lead poisoning	0	+
4.	Chronic plumbism, ulcers of leg		0	+
5.	Constipation		0	+
6.	Rheumatism		0	+
7.	Juvenile tabes?		0	+
8.	Arteriosclerosis		0	+
9.	Gastritis	Tabes	0	+
10.	Carcinoma of stomach and liver		0	+
11.	Syphilis		..	+
12.	Syphilis		..	+
13.	Syphilis		..	+
14.	Tuberculous epididymitis	Tuberculosis	0	+
15.	Bronchitis		0	+
16.	Syphilis		..	+
17.	Syphilis		0	+
18.	Carcinoma of stomach	Carcinoma	0	+
19.	Constipation		0	+
20.	Syphilis		..	+
21.	Bronchitis		0	+
22.	Myalgia		..	+
23.	Vertigo		0	+
24.	Endocarditis		..	+
25.	Syphilis		..	+
26.	Syphilis		..	+
27.	Syphilis		..	+
28.	Anemia		0	+
29.	Constipation		0	+
30.	Vicarious menstruation		0	+
31.	Exophthalmic goiter	Exophthalmic goiter	0	+
32.	Bronchitis, neurasthenia		0	+
33.	Pleurisy, myalgia		0	+
34.	Syphilis and tuberculosis	Tuberculosis	..	+
35.	Syphilis		..	+
36.	Bronchitis		..	+
37.	Syphilis?		..	+
38.	Syphilis?		0	+
39.	Syphilis?		0	+
40.	Anemia		..	+
41.	Syphilis		..	+
42.	Bursitis	Bursitis	..	+
43.	Syphilis?		0	+
44.	Syphilis		..	+
45.	Constipation		0	+
46.	Syphilis?		..	+
47.	Syphilis?		0	+
48.	Tuberculosis	Tuberculosis	..	+
49.	Bronchial asthma	Asthma	0	+
50.	Aneurysm of aorta	Aneurysm	..	+
51.	Tuberculosis	Tuberculosis	..	+
52.	Syphilis		..	+
53.	Hiccough		..	+
54.	Tuberculosis	Tuberculosis	..	+
55.	Gastritis		..	+
56.	Syphilis		..	+
57.	Bronchitis		..	+
58.	Syphilitic aortitis		..	±
59.	Malaria	?	0	±
60.	Myalgia	?	0	±
61.	Syphilis?		..	±
62.	Pulmonary tuberculosis	Tuberculosis	..	±
63.	Congenital syphilis		0	±
64.	Constipation	?	0	±
65.	Syphilis?		0	±
66.	Arteriosclerosis		..	±
67.	Anemia		..	±
68.	Tuberculosis	Tuberculosis	0	±

* In each of these cases the final diagnosis was of syphilis. Attendant conditions as noted.

† The sign + indicates Wassermann test positive; ±, weakly positive.

In order to reduce the errors of the test, whenever possible it was repeated. When only one visit was made this could not be done. Tests were made more than once on over half of the sixty-eight strong and weak positives. Repeated tests naturally were of most value in those reacting weakly positive. In some cases

a weakly positive reaction when repeated would be negative; others would be frankly positive, and still others would be again weakly positive.

When a history of syphilis was obtained, or specific treatment had been used and the reaction showed but 25 per cent. hemolysis the case is called syphilitic. With no history, symptoms or other manifestations of syphilis and with but one doubtful test the diagnosis of syphilis is questionable. With several negative tests after one doubtful positive the test was classified as negative.

Many cases diagnosed as suspected syphilis reacted negatively. Although the Wassermann test is of great value when positive, still repeated negative reactions are of great service in aiding diagnosis. Included among the conditions reacting negatively are diabetes mellitus, acute articular rheumatism of both streptococcal and gonorrheal origin, endocarditis, arteriosclerosis, gastritis, gastric ulcer, neurasthenia, tuberculosis of lungs, of lymph glands, and of epididymis, epilepsy, myalgia, constipation, icterus, lead poisoning, intestinal parasites, Hodgkin's disease, cholecystitis, exophthalmic goiter, bronchitis, anemia, myocarditis, emphysema, neuritis, carcinoma of breast and carcinoma of stomach.

SUMMARY

A positive Wassermann test is of inestimable value in the diagnosis of syphilis in the medical dispensary.

The unreliability of histories and the protean nature of the disease make it extremely difficult of correct clinical diagnosis in all cases.

Fifty-six positive Wassermann reactions were obtained in the routine examination of 418 patients. Only 50 per cent. of those with a positive test gave a history of having syphilis. Twelve weakly positive reactions were obtained, four patients being tested only once; without history or symptoms the diagnosis of syphilis could not be made in these. Repeated negative tests were of assistance in diagnosing nonsyphilitic conditions in which false histories of previous infections were obtained.

EFFICIENT DISPENSARY CLINICS A REQUISITE FOR ADEQUATE COPING WITH VENEREAL DISEASE *

MICHAEL M. DAVIS, JR., PH.D.
Director of the Boston Dispensary
BOSTON

Fifteen years ago tuberculosis was prevalent, probably more prevalent in proportion to the population than it is today; but comparatively few persons were thinking and talking about it as a public problem of magnitude. Today venereal diseases are prevalent, probably no less prevalent in proportion to the population than they were ten or fifteen years ago; but the general public is but just beginning to allow us to talk about them as a public problem of magnitude. A suggestive parallel may be drawn between tuberculosis on the one hand and venereal disease on the other, with respect to the growth of public interest in their treatment and prevention. Physicians and others close to the facts have realized for many years how grave and widespread was the problem presented by tuberculosis; but it is only ten years since the campaign against it was organized, nationally, when the National Association for the Study and Prevention of Tuberculosis was formed. A few local antituberculosis committees had preceded this general body. Since 1905 a wonderful development has taken place. A great educational campaign has spread to every corner of the country. Tuberculosis is a name to conjure with; a word to raise money with; $20,000,000 was spent by public and private associations in treating and preventing tuberculosis last year. Even more remarkable has been the increase in facilities providing for diagnosis and treatment.

In 1905, there were only eighteen tuberculosis sanatoriums, providing 673 beds. In 1915, there are over 500 sanatoriums, providing some 30,000 beds. Up to 1905, only eighteen dispensary clinics for tuberculosis had been opened in the United States. In 1915 there were over 400 such clinics and the number is increasing with great rapidity. These vast facilities for treatment have been established within this short period for a disease which is no more prevalent today than it was ten years ago, so that both sanatoriums and clinics are caring for patients who formerly were either cared for by private medical practice or not cared for at all. The establishment of sanatoriums and clinics has been furthered largely by physicians and is still proceeding vigorously, with their support. The conclusion is inevitable that private practice as an influence in dealing with tuberculosis is recognized by the profession as inadequate, that during the last ten years it has been, relatively speaking, a static factor, so far as caring for numbers of patients is concerned; and that the chief means whereby more adequate facilities for the diagnosis and treatment of tuberculosis have been obtained during the past ten years has been by the establishment of public or semi-public facilities.

Consider now venereal disease, which, as has been suggested, is in some ways a parallel problem. The treatment facilities for syphilis and gonorrhea include private medical practice, dispensary clinics and hospitals (chiefly the clinics), quacks, and self-treatment. The fact that large numbers of patients treat themselves, particularly for gonorrhea, with medicines purchased on the advice of drug clerks or friends, and the persistent flourishing of quacks and advertising institutes, indicate that private medical practice and medical institutions taken together do not meet the situation. We all agree that treatment by quacks and self-treatment by patients are undesirable; but quacks persist, though the limitation of advertising and individual prosecution may diminish their numbers substantially and have done so in certain communities. Self-treatment is also prevalent. One may fear that self-treatment too often takes up the slack when the number of quacks is reduced. Doubtless the truth is that quacks and self-treatment can only be driven out when adequate substitutes are provided.

To be adequate, treatment facilities must fulfil six conditions:

1. Skilled Service: The medical service must be well trained in the diagnosis and treatment of these diseases.

2. Equipment: The physician must have at command technical equipment for diagnosis and treatment according to modern medical standards.

3. Organization: Facilities must be organized in proper correlation with the health departments of the

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local community and of the state, and with related social agencies and institutions.

4. Accessibility: The facilities must be available at such places and hours as do not involve undue sacrifice of time, money, or convenience to the persons who need to use them.

5. Cost: The cost of the facilities must be within the means of the patients.

6. Sufficiency in Amount: The amount of such facilities meeting the above conditions must be sufficient to cover 100 per cent. of the need in any community.

Let us consider private medical practice in relation to these six criteria of adequate treatment of venereal disease. As to the first, practically all the existing supply of diagnostic skill is available from men giving part or all of their time to private practice. When, however, we come to the test of equipment, it must be borne in mind that modern medical standards demand fairly elaborate equipment for adequate diagnosis and treatment of these diseases. The cystoscope; various instruments for examination and treatment of conditions in bladder and urethra; laboratory facilities for Wassermann tests; a microscope for the examination of smears; a dark-stage attachment for the diagnosis of primary syphilis; sterilizing equipment; these have all been listed by committees of genito-urinary surgeons and specialists in syphilis in New York as minimum requisites of equipment for medical men working in clinics dealing with syphilis and gonorrhea. Undoubtedly, therefore, they may be regarded as requisites for medical men treating these diseases in their offices. When it is borne in mind that the cost of the instruments alone would run to at least $300, and might easily be double that sum, and that in many localities private practitioners have no local facilities for Wassermann tests, it may well be questioned to what extent adequate equipment for the diagnosis and treatment of syphilis and gonorrhea can generally be found in the private offices of men not specializing in the care of these diseases.

As to organization: The public-health services of a few states have begun to assist private practice by providing laboratory facilities, but, in general, private medical practice remains individualistic, unorganized, so far as relationships to public health or social welfare agencies are concerned. As to accessibility, in the larger communities we find specialists in these diseases whose hours, as a rule, are not such as to be available to the mass of the population, who cannot afford to lose much time from work. Office hours are fixed according to the demands of the clientele from which the specialists draw their main body of patients. The mass of medical practitioners, not specializing, of course have hours which in many instances are accessible to all classes in the community, that is, hours during the evening as well as the day.

Now as to the cost of treatment. Syphilis and gonorrhea are expensive diseases. The period of treatment is not short at the best and may be extremely prolonged. So far as I can ascertain from physicians who are devoting special attention to genito-urinary diseases, they require that private patients with acute gonorrhea, for example, come for treatment three times a week for a period which is at least six weeks, and it may be several months before less frequent visits are allowed. In this statement I am merely referring to the minimum which appears to prevail in the private practice of physicians who are regarded as experts in dealing with gonorrhea, but the office rates on which the following cost estimates have been based are those of the general practitioner, not of these specialists. The cost of such treatment, including also the necessary laboratory examinations, etc., and estimating a very low rate for office visits, would be not less than $100 for the first six months, and might be very much more. Furthermore, a large number of male and female patients with gonorrhea come to the physician in chronic stages, or when complications have arisen, requiring surgical operations. This further adds to the expense. The cost of medicines used for gonorrhea is also a large item, particularly at the usual retail prices levied by drug stores, being hardly less than $2 a week, and often much more.

The treatment of syphilis, while requiring less frequent visits to a physician, often demands several injections of salvarsan, which would cost the patient from $10 to $50 apiece, and always requires a period of treatment such as to cost the patient at least as much, usually more, than has been specified for gonorrhea.

The first infection of gonorrhea usually arises in the case of young men before the age of marriage, or between 17 and 25 years. Fully five sixths of young men at this age, in any community, are working men or clerks, or are starting in business or professions, and their earning capacity is between $400 and $800 annually. The expenditure of such a sum as $100 during a period of six months is a very serious item. In the case of married men, or men with dependents, the annual income among the great bulk of our self-supporting population runs, even in large cities, only between $800 and $1,200. The expenditure of 15 per cent. to 25 per cent. of such an income for the treatment of one of these diseases is out of the question for these persons. They can pay for some treatment, but not for enough or good enough treatment.

The sixth criterion was the question, Are there sufficient facilities in the community, meeting the above conditions, to cover 100 per cent. of the need? Has not the preceding discussion indicated the answer? Private medical practice has already given up attempting to meet the needs of "the poor." They go to clinics in the cities where there are such, and where there are no clinics they, for the most part, go to the drug stores. Those who are above the poverty line, but who have only a moderate income, are, as the preceding discussion has endeavored to show, unable to afford the necessary minimum cost required by modern standards for treatment of syphilis and gonorrhea when this treatment has to be carried on in private offices. In a word, treatment for syphilis and gonorrhea by private medical practice is too costly when it is adequate, and when it is not too costly to meet the needs of the whole population, it is likely to be inadequate.

If ten years ago a similar analysis had been made of the facilities for the medical care of tuberculosis, a similar conclusion might have been reached. Whether such an analysis was ever made I do not know. As has already been indicated, however, the actual history has been that physicians themselves have labored to found sanatoriums and dispensaries for tuberculosis, instead of leaving these thousands of cases within the care of private practice. Physicians have done this because they have recognized that there was a public need to be met, and that sanatoriums and

clinics were the only means by which adequate treatment facilities could be provided. The parallel with venereal disease is obvious. Gonorrhea and syphilis are more prevalent than tuberculosis, and their medical treatment is more costly. There is at least as much need to do for venereal disease what began, ten years ago, to be done for tuberculosis.

As yet outpatient clinics have been established chiefly to "help the poor" and also to provide centers for teaching medical students and to increase the knowledge of practicing physicians. The medical service has usually been voluntary on the part of the staff. Can a high standard of efficient treatment be secured in such clinics, or does the organization of a service with considerable numbers of patients to be dealt with within a limited time necessarily mean hasty and slipshod work? Criticism of dispensary clinics for inefficiency has been forcibly voiced within recent years. Unless it can be shown that clinics can be efficient, it is not worth while perhaps that they should be established on a large scale as public health measures for dealing with syphilis and gonorrhea.

While within recent years criticism of dispensary clinics has been in the main justified, this has been an evidence of growth rather than of decline, and, in my opinion, sufficient data have been gathered to show that clinics can be efficient, if certain conditions are met.

The fact that clinic efficiency can be tested and progress thus stimulated, because it can be measured, is, to my mind, perhaps the fundamental point. During the last few years several methods of testing medical efficiency in outpatient work have been devised and applied in certain clinics. The methods are chiefly two:

First, the statistical method, which chiefly tests the amount of inefficiency. If it is found that of 500 patients with acute gonorrhea, 40 per cent. paid only one visit, obviously the clinic's inefficiency was hardly less than 40 per cent. We cannot say that a patient has been given satisfactory treatment even if he has paid thirty visits to such a clinic. We can say that he has been given ineffective treatment if he has paid only one, two, or three visits, unless the clinic can demonstrate that it has sent the patient into other good hands. Thus the mere counting of the percentage of patients paying one, two, or three, four or five visits, and so on up to the high figures, is an extremely useful, though necessarily rough means of testing clinical efficiency and of stimulating progress. Such tests have been conducted at the Boston Dispensary, Lakeside Hospital, Cleveland, Cornell University Medical College, and have been published. The method is clear, the need for increase in efficiency is urgent. Such tests should be routine everywhere. They take little time and pay big returns. It might be mentioned that in the male genito-urinary clinic of the Boston Dispensary the percentage of patients paying only one or two visits has been reduced as follows:

In 1911-1915 this percentage was 47 and the percentage of patients paying more than five visits was only 32.5. In 1914-1915 the percentage of patients paying only one or two visits has been reduced to 40 per cent., and of patients paying more than five visits has been increased to 45 per cent. In the evening work of the same institution, the results have been still better, for the proportion of patients paying one or two visits has been only 24.5 per cent., and those paying more than five visits 50.5 per cent. I do not mention these results as being indications that satisfactory results have been reached, but that improvement is possible, and that progress can be measured.

A more thorough and scientific test involves the actual examination of the clinical records by one of the physicians in charge. Each patient must be judged as cured, improved, pending, lost (one-visit and two-visit patients are usually lost), and the percentages may be stated. In the three clinics previously mentioned, such tests have been made and the percentage of cured patients varied from nine to twelve. You may think this percentage small, and it is small, but gonorrhea is a difficult disease at best, so far as a layman can judge. The comparison is not between the 12 per cent. of cures in a certain clinic and 100 per cent. of cures theoretically possible, but between 12 per cent. in a clinic and the proportion of cures reached in private practice with a similar class of patients. Who knows the latter percentage?

Under certain conditions I believe that outpatient clinics can be efficient. And these general conditions might be formulated as follows:

Skilled medical service is essential and in outpatient clinics we have the advantage over private practice that men who are especially skilled in dealing with gonorrhea and syphilis can take charge of the service, while men of less special experience can work under them and profit thereby. Organizing medical service is a gain, both to the skilled men, who see more patients, and more selected patients, and to the men of less skill, who have an opportunity to learn.

Second, the equipment for diagnosis and treatment: Here the clinic gains over private practice on the economic side, because in a single clinic equipment can be used for many patients which would otherwise have to be duplicated in many private offices with proportionate increase of expense. Pooling equipment is a great saving.

The organization of the clinic in its medical and executive staff is essential to secure the best results for the prompt and careful handling of patients and for the keeping of accurate records. The possibility of relating the clinic to external agents, such as the board of health, has been shown by Dr. Warner of Lakeside Hospital, Cleveland. At the same institution, and at the Boston Dispensary, the Massachusetts General Hospital, and elsewhere, the relation of syphilis and gonorrhea to social agencies and medical-social workers, has been shown. Clinics must be *accessible* to the people who need them. Most syphilis clinics are in the morning or afternoon, although evening clinics have been established in New York, in New Orleans, and in Boston. Perhaps elsewhere there are evening clinics of which I do not know. But any plan for the utilization of clinics as public health measures must include evening clinics. It must also include clinics charging more than nominal fees, for there is no reason why patients who are self-supporting, who are working, should not pay for what they get, provided the fees are such that they can pay them.

At the Boston Dispensary the establishment of evening pay clinics treating syphilis and gonorrhea has been undertaken within the past year. The details of the service have been presented in papers before other societies and I shall not go into them except in a very brief way. An evening clinic for men having gonorrhea, established in March, 1914, treated during its first year 632 patients who paid 6,809 visits

The fees charged have been 50 cents a visit, and prices for medicine somewhat above the cost of the materials. The medical staff has been salaried. The clinic financially has paid all expenses, including an estimated charge for lighting and heating. The income from the clinic was $4,936.34 and the expense $4,622.89. It may be mentioned that the economic facts show the cost of the drugs, bought at usual drug-store prices, would amount to $2 or $2.50 a week. The cost at the clinic to the patient paying 50 cents a visit and getting the same medicines is $2.25 a week. It may thus fairly be said that the clinic does not take money that would otherwise go to the medical profession. It would go instead to the drug stores. The evening syphilis clinic, where the same fee has been charged, and the medical staff salaried, was established at the end of July, 1914, and during the first nine months treated 116 patients, paying 449 visits. The income during the past six months has been $519 and the expense $313.55. It will be seen that this clinic was more than self-supporting, though if charges for rental and overhead supervision had been made the surplus would be much less. Yet, even so, the clinic would meet expenses. The amount of diagnostic and treatment work for gonorrhea and syphilis is so large, the numbers to be reached are so vast, that unless such self-supporting clinics are established, the expense will probably be too heavy to enable these treatment facilities to be provided. Furthermore, it is better that patients should pay and come to a self-supporting clinic, than that the same patients should not pay and should regard themselves, and be regarded, as so-called objects of charity.[1]

A point of the first importance now arises. If clinics are to be developed as public health measures, clearly we cannot proceed on the same basis that we are accustomed to in most existing dispensaries. We cannot expect physicians to give their services. The medical service must be salaried. There is no reason why clinics with volunteer service, especially in connection with teaching institutions, may not continue, but clinics established as public health measures for the purpose of providing adequate treatment for 100 per cent. of the syphilis and gonorrhea patients in any community, must have salaried services. Such clinics would provide a substitute for the quack, and for self-treatment, and would bring under medical supervision great numbers of syphilis and gonorrea patients who now receive no medical care. Out of 200 visiting the evening genito-urinary clinic at the Boston Dispensary, thirty-eight had been treated by quacks and sixty-seven had had only self-treatment. Fifty-two and five-tenths per cent. of the total had had no previous medical attention of a reputable sort for the gonorrheal infection which brought them to the clinic. While these figures are not necessarily representative, they are very suggestive.

In the elaborate volume of testimony taken from experts by the British Royal Commission on Venereal Diseases last year, the need of a great enlargement of treatment facilities is brought out again and again and the increase of dispensary clinics is regarded as the chief means whereby this result may be attained. Incidentally, evening clinics are mentioned by many witnesses at no less than seventeen different places in the volume of testimony.

In establishing such clinics consideration must also be given to the provision of certain facilities at public expense. Salvarsan for syphilis, in infectious conditions, for people who cannot afford to pay for the drug, is a proper matter for public subsidy. Laboratory facilities for the diagnosis of syphilis and gonorrhea have already been provided in several states, in New York and doubtless in other cities, and is a proper subject for municipal or state departments of health or for city hospital laboratories. If we face the facts, if we recognize the enormous amount of syphilis and gonorrhea in the community, if we believe it to be a fact that the mass of these cases do not now receive adequate treatment, that most patients cannot afford adequate treatment, then we must turn to organized medical service in clinics as a resource to provide this treatment. The establishment of outpatient clinics on a large scale, administered as public health measures, for the diagnosis and treatment of syphilis and gonorrhea, is a practicable, necessary, and immediately desirable step in the campaign against these diseases.

1. In speaking of the conditions which clinics must meet in order to be efficient, I have gone beyond the useful standards announced by the Associated Out-Patient Clinics of New York. Their standards, however, relate primarily to technical equipment and much more is necessary in organization, follow-up systems, etc., if clinics are to reach a proper standard.

A STATISTICAL STUDY OF SYPHILIS

AS SEEN IN THE OUTPATIENT DEPARTMENT OF THE UNIVERSITY OF CALIFORNIA HOSPITAL *

JAMES L. WHITNEY, M.D.
SAN FRANCISCO

The following statistics are published for two reasons: First, the Wassermann reaction has so changed our views as to syphilis in the last few years that all statistics collected previous to its use are rendered of little value. Secondly, the present figures represent cases which have been perhaps unusually carefully studied with the possibility of syphilis in mind. This disease is more common in San Francisco than in many other American cities, and for this reason clinicians in this region are constantly on the lookout for it. There are probably few outpatient dispensaries where an equal proportion of the patients have been subjected to the Wassermann reaction. For several years the children's department has observed the rule of a routine Wassermann in each case; the nerve department has demanded the reaction for almost every case, and the medical department for over half. It has recently been decided for the medical department that thoroughness demands the routine Wassermann for each case. Other departments have used this reaction to a less degree, being consulted usually for a given local trouble, and not for the general condition. Any patient who seems to need general investigation, however, is sent for consultation to the medical rooms, the total number of such referred cases being large. For example, most eye patients with conditions other than refractive errors are given the benefit of a systematic examination. The result is that these figures may be taken to represent unusually closely the actual incidence of syphilis among patients in this locality.

The question naturally arises how far these statistics represent average American conditions. San Francisco has long carried the reputation of having an unusually large amount of venereal disease in compari-

* From the University of California Medical School, with the aid of a grant from the George Williams Hooper Foundation for Medical Research.

son with the American average, and this is doubtless true. At the same time we believe that clinicians here are rather more likely to suspect syphilis in every case than are those of some other places, and therefore succeed in demonstrating a larger proportion of the cases which exist. An indication of this appears statistically. For example, over 20 per cent. of our syphilis cases are found to have bone and joint lesions which we believe to be due to the spirochete. The contrast is striking when examination of the annual reports of a number of other clinics fails to reveal any, where the incidence of bone and joint syphilis is not insignificant as compared with the total number of diagnoses of syphilis. The assumption of less syphilis in other communities would not explain so gross a difference in the proportions of its various manifestations.

The diagnosis of skin lesions of syphilis is easy, and such cases are generally recognized, but it is the prime purpose of the following report to show, for a mixed clinic, what a large proportion of the patients with syphilis exhibit their disease in manifestations which we believe often go unrecognized.

It may be added that each of the 7,885 case histories on which this report is based has been reexamined to

TABLE 1.—CASES OF SYPHILIS SEEN IN VARIOUS DEPARTMENTS OF THE OUTPATIENT DEPARTMENT FROM JULY 1, 1912, TO MAY 1, 1914

Department	Cases of Syphilis	Total New Cases	Percentage of Syphilis Cases to Whole Number, per Cent.
Whole O. P. D.*	544	7,885	6.9
Nerve	82	363	22.6
Medical	370	1,695	21.8
Skin	134	892	15.0
Orthopedic	90	652	13.8
Genito-urinary	57	434	12.9
Eye	121	1,421	8.5
Throat, Nose, Ear	53	1,597	3.3
Children	26	890	2.9
Women's Clinic	21	915	2.3
Surgical	28	1,262	2.2

* The numbers for the various departments added together are, of course, greater than the total number of the whole outpatient department, because many patients visited more than one department.

be sure that the diagnosis was properly founded and that every positive case was recorded. In Table 2 the figures for diagnoses are given as they stand in the card catalogue, including of course some cases in which the diagnosis was not actually proved, but in the more accurate analysis of Table 3 the facts are given in outline on which the diagnosis was based. For this reason the totals of cases as given in Tables 2 and 3 do not agree in all details, though the divergence is nowhere great.

Little need be said to explain the facts as they appear in the tables. Table 1 gives for the whole outpatient department and for each of its divisions the proportion of cases in which syphilis was diagnosed to the total of new cases seen. The nerve department leads, as might have been expected, with a proportion of 22.9 per cent., and the medical is a close second with 21.8 per cent. The surgical department is last with 2.2 per cent., partly explainable by the fact already mentioned that in most cases the matter of syphilis was not investigated. The percentage for the whole outpatient department is 6.9 per cent.

Table 2 gives the diagnoses from the card catalogue of the various conditions interpreted as syphilitic. The table is inaccurate in one particular, namely, that the figures for skin lesions are too low. It sometimes happened that a roseola or other lesser eruption failed to be mentioned in cases with other manifestations, such as iritis, etc. An unusually high percentage of extragenital primaries is shown (eight out of thirty-one), but the total number is too small to warrant any conclusion except that it may have been due to chance.

TABLE 2.—DIAGNOSES OF SYPHILITIC LESIONS AMONG 544 CASES OF SYPHILIS*

Diagnosis	Number of Cases	Proportion to Total Cases of Syphilis, per Cent.
"Syphilis," not localized, or localization not given	191	35.1
Aorta: Aneurysm	8	
Aortitis	5	
Arteriosclerosis	3	
Heart: Myocarditis and myocardial insufficiency	14	
Aortic insufficiency	5	
Aortic and mitral insufficiency	1	
Total circulatory conditions	36	6.6
Bones: Gumma	1	
Osteomyelitis	10	
Periostitis	19	
Joints: Arthritis, infectious type, including destructive lesions	...	
General or multiple	9	
Elbow	3	
Finger	1	
Hip	8	
Knee	3	
Spine	41	
Arthritis, toxic type	18	
Total bone and joint conditions	113	20.8
Eye: Choroiditis and chorioretinitis	17	
Iridocyclitis	26	
Keratitis	14	
Nerve atrophy	21	
Neuritis and papillitis	6	
Ophthalmoplegia	7	
Retinitis	12	
Scleritis	3	
Total eye conditions	106	19.5
Nervous system: Cerebrospinal syphilis	44	
Tabes dorsalis	29	
General paralysis	4	
Total nerve conditions	77	14.1
Skin: Alopecia	1	
Gumma	9	
Macular, papular, pigmentary, etc.	47	
Ulcer	5	
Primary	23	
Extragenital	8	
Total skin conditions	93	17.1
Ear, internal	5	
Larynx	5	
Lip	1	
Liver	1	
Lung	2	
Lymph nodes	1	
Mouth	3	
Nose	12	
Pharynx	3	
Parotid	1	
Tongue	7	
Tonsils	1	
Testis	1	

* The totals are greater than 544 because many patients had multiple lesions.

Table 3 is the result of the selection and study of all histories with a given diagnosis, in order to make out in how many of the cases with this lesion syphilis seemed to be a causative factor. The conditions selected for this study were ones generally known to be the result of syphilis, or ones in which our experience seemed to point to a relationship not universally recognized.

The cases are arranged in four classes according to the evidence in favor of a syphilitic basis: positive, doubtfully positive, doubtfully negative, and negative (including presumably negative; that is, cases in which nothing suggested syphilis, but in which the disease had not been definitely excluded). The data on which the diagnoses were based is also indicated in brief. Considerable conservatism has been employed in list-

ing cases in these groups, a case being considered doubtful unless the proof was pretty conclusive. Thus, among the doubtfully positive and doubtfully negative cases are listed many old cases treated for long periods as syphilitic, but without Wassermanns, or with negative reaction.

In certain cases the point might well be raised that the coexistence of syphilis with a certain condition does not necessarily prove that the lesion itself is syphilitic. That question cannot here be considered for each group in detail, to the extent of giving pathologic data or notes as to the behavior of the lesions under antisyphilitic treatment. To apply a purely statistical method, however, it is evident that if syphilis is found present in a group of cases in far greater proportion than would be found in a similar group of normal persons, or of patients in general, the presumption is very strong that there is a causal relationship. For example, about 7 per cent. of our patients have syphilis; it must be more than a coincidence that 35 per cent. of our lesions of the aortic valve, and 28 per cent. of our arthritis cases of the infectious type occurred in patients known to be syphilitic.

Several remarks may be made with reference to separate items in this table. The high percentage of syphilis as the cause of aortitis and aneurysm is well

TABLE 3.—PROPORTION OF CASES WITH GIVEN DIAGNOSES FOUND TO HAVE SYPHILIS

Diagnosis	Total Cases	Positive		Doubtfully Positive		Doubtfully Negative		Negative		Percentage of Positive and Doubtfully Positive Cases to Whole Number, %
		No.	Remarks*	No.	Remarks*	No.	Remarks*	No.	Remarks*	
Aorta: Aneurysm	11	7	5 W+ 1 W− H+ 1 W− H−†	1	W− H+?†	3	3 W− H−	0		72.7
Aortitis	5	3	1 W+ 1 W− H+ 1 W− H−†	2	2 W− H+?	0		0		100
Dilatation	4	0		2	1 W± 1 W− H+?†	2	1 W− H−† 1 W− H+?	0		50
Arteriosclerosis	55	12	7 W+ 3 W− H+ 2 No W H+	5	2 W± 2 W−† 1 No W†	7	3 W−† 2 No W H+?† 2 No W†	31	13 W− 18 No W	30.9
Heart: Myocarditis	41	11	9 W+ 1 W±† 1 W− H+	3	1 W± 2 No W†	6	1 W± 5 No W†	19	13 W− 6 No W	34.1
Disorders of heart beat	22	4	2 W+ 2 W− H+	2	1 W− H+? 1 No W†	3	3 No W†	13	8 W− 5 No W	27.3
Aortic valvular lesions	20	7	5 W+ 1 W± H+ 1 W− H+	0		0		13	9 W− 4 No W	35.0
Mitral lesions	71	5	3 W+ 1 W± H+ 1 No W H+	2	1 W±† 1 No W†	2	1 W±† 1 No W†	62	28 W− 34 No W	9.8
Eye: Iritis	49	21	14 W+ 3 No W H+ 2 W− Lu+ 2 No W†	4	3 W−† 1 No W†	8	1 W−† 7 No W	16	8 W− 8 No W‡	51.0
Keratitis	27	14	11 W+ 2 W− H+ 1 No W	0		5	5 No W	8	2 W− 4 No W‡ 2 No W	51.9
Scleritis	11	3	2 W+ 1 W− H+	0		0		8	4 W−	27.3
Retinitis	43	11	8 W+ 3 W− H+	1	No W†	8	2 W−† 6 No W†	23	16 W−	27.9
Neuritis, papillitis	14	6	5 W+ 1 W− H+	0		2	No W†	6	6 W−	42.8
Nerve atrophy	20	10	7 W+ 3 W− H+ 2 W− Tabes 4 No W H+	2	1 W−† 1 No W†	10	2 W−† 8 No W†	2	2 W−	60.0
Choroiditis, Chorioretinitis	26	14	11 W+ 2 W− H+ 1 No W H+	3	1 W± 1 W− H+? 1 W−†	3	No W	6	5 W− 1 myopia	65.4
Ophthalmoplegia	13	7	7 W+	0		2	1 W− H+? 1 W−†	4	3 W−	53.8
Bones: Osteomyelitis	36	7	6 W+ 1 No W H+	5	1 W− H+ 4 No W†	3	No W	21	4 W− 13‡	33.3
Periostitis	33	16	16 W+	4	4 No W†	5	3 W−† 2 No W†	8	4 W− 4 No W‡	48.5
Joints: Arthritis, infectious type	236	56	42 W+ 2 W±† 10 W− H+ 2 No W†	10	2 W−† 8 No W (old cases)	21	2 W−† 1 W± 18 No W†	149	89 Tbc. 22 Gonorrh. 34 Ac. infections 4 Rheum. fev.	27.9
Arthritis, toxic type	169	12	12 W+	2	1 W± 1 No W H+	3	2 W± 1 W−†	152	58 W− 94 No W	8.2

* Under the head of "remarks" W+ means Wassermann positive, and the number before it gives the number of cases with this finding. W− means Wassermann negative, W± means Wassermann doubtful or suggestive, and No W means Wassermann not made. H+ is history of syphilis definite. H− No history. H+? History doubtful. † Other lesions present make diagnosis of syphilis probable or possible, or in some cases positive diagnosis made on the character of the lesion in question. ‡ Traumatic lesions.

recognized. The proportion among heart cases is, however, probably considerably higher in San Francisco than in many other places, not only because of the presumed greater frequency of syphilis, but also because rheumatic fever is comparatively a rare disease in this region, a fact which I do not remember seeing in print, but commonly accepted here by the best observers.

The high incidence of syphilis as a cause of eye lesions is in accordance with experience elsewhere, but is a fact not well enough recognized by ophthalmologists — at least not to the extent of their demanding routine Wassermanns in every case of the lesions mentioned below.

The most striking statistical fact here brought out (shown in both Tables 2 and 3) is undoubtedly the large number of joint lesions giving positive Wassermanns, and in our opinion due to the spirochete. This matter has been the subject of a special study by Dr. W. I. Baldwin and me[1] to which reference is made for further discussion.

In connection with certain of the cases of periostitis and osteomyelitis a statement should be made, which also applies to other conditions, such as iritis and keratitis, namely, that a history of trauma by no means rules out the possibility of syphilis. In one very stubborn case of osteomyelitis following a bullet wound the patient was later found to have a positive Wassermann, and promptly recovered under appropriate treatment. Discovery of a syphilitic condition was made in a number of eye cases in which the lesion at first was thought to be evidently on a traumatic or other obvious basis.

CONCLUSIONS

If these figures convey nothing else, they should emphasize the value and necessity of the routine Wassermann examination. For all hospitals this ought to be done on all medical, nerve, and obstetrical cases at least. Where such lavish use of the reaction is not possible, the indications for it should, at any rate, be very broad. Patients who admit a previous syphilis, or who show strong evidence of its presence, and who will probably be given antisyphilitic treatment in any case, need the testimony of the Wassermann, if anything, less than patients who do not otherwise suggest syphilis than by having a disease which may be due to syphilis, but need not necessarily be so. Large numbers of cases could be cited in which the diagnosis has been cleared up by the routine Wassermann in the absence of any suspicion; this has often occurred after long periods of failure to improve on other treatment. We feel that any obscure case of any kind ought to have a Wassermann. This is especially true in cases in which the patient's complaints seem out of proportion to physical findings—in cases in which the diagnosis of neurasthenia is too often satisfactory to the physician.

Of the classes of disease in which the Wassermann seems especially called for, may be mentioned all diseases of the central nervous system, all circulatory diseases, including cardiorenal and renal, all bone and joint diseases, all diseases of the eye involving nerve, retina, choroid, sclera, iris, or lens, all liver diseases, all chronic digestive diseases, all tumors, all cases involving lymphatic enlargement, and all constitutional or metabolism diseases.

1. Whitney, J. L., and Baldwin, W. I.: Syphilis of the Spine; Its Frequency and the Value of Its Characteristic Lesions as a Diagnostic Sign of Syphilis, THE JOURNAL A. M. A., this issue, p. 1989.

SYPHILIS OF THE SPINE

ITS FREQUENCY AND THE VALUE OF ITS CHARACTERISTIC LESIONS AS A DIAGNOSTIC SIGN OF SYPHILIS*

JAMES L. WHITNEY, M.D.
AND
WALTER I. BALDWIN, M.D.
SAN FRANCISCO

There is a general belief that syphilis of the joints is a rare disease. This is the more remarkable inasmuch as the various forms of syphilitic arthritis have been clearly enough described, not only in separate papers, but in textbooks as well. For example, Goldthwaite, Painter and Osgood[1] include in their textbook an accurate description of the various lesions which may occur, and give references to literature, but add, as to frequency, that "there are great differences of opinion," and state of the toxic form (type of arthritis deformans): "This must be rare, we believe, in this country." On the other hand, many observers have believed that the incidence of joint lesions is high, especially in hereditary cases. Von Hippel asserts an incidence of 56 per cent., and Fournier of 40 per cent. O'Reilly[2] contends that this disease is much commoner than is usually supposed.

With regard to the frequency of syphilitic joint lesions in general, we shall here only refer to the paper by one of us (Whitney[3]) in which it was shown that among 544 syphilitics studied in the University of California Hospital, the diagnosis of syphilitic joint lesions was made in 83, or 15.2 per cent. These joint cases are listed in Table 1.

TABLE 1.—SYPHILITIC JOINT LESIONS AMONG 544 CASES OF SYPHILIS

Infectious type (including both synovitis and destructive lesions):	
General or multiple	9
Elbow	3
Finger	1
Hip	8
Knee	3
Spine	41
Toxic type	18

It was further found that of all cases of arthritis seen, 18.7 per cent. gave evidence of being syphilitic Of the infectious type of arthritis 27.9 per cent. were syphilitic, and of the toxic type 8.2 per cent. These figures are striking, and show that syphilitic joints are much commoner than is generally supposed. Even of the arthritis deformans type, syphilis seems to be a causative factor in a very considerable number.

It will be noticed that among the joints involved, the spine is by far the commonest. If the incidentally discovered abnormalities of the spine had been included, which were not considered important enough to be mentioned as a separate diagnosis, the figures would have been far more striking.

We have for some years in the University Hospital recognized as extremely common, and very characteristic, certain lesions of the spine found in syphilitics.

* From the University of California Medical School, with the aid of a grant from the George Williams Hooper Foundation for Medical Research.
* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Goldthwaite, Painter and Osgood: Diseases of the Bones and Joints, Boston, D. C. Heath & Co., 1909, p. 441.
2. O'Reilly: Am. Jour. Orthop. Surg., 1914, xi, 3.
3. Whitney, J. L.: Statistical Study of Syphilis as Seen in the Outpatient Department of the University of California Hospital, THE JOURNAL A. M. A., this issue, p. 1986.

For this view Dr. S. J. Hunkin of San Francisco is primarily responsible, who used to insist on this fact long before the Wassermann reaction gave him the confirmation needed to convince others.

The following study was undertaken to put our strong impressions into the definite form of figures. A series of 100 cases of syphilis was carefully examined for joint lesions, with special reference to the condition of the spine. The cases were those of patients who happened in, day by day, to the medical clinic, and the only selection was in choosing only proved syphilitics, and in rejecting four who, though showing, as we believed, the characteristic spinal lesions, presented also complicating factors (in one case a gonococcus urethritis, in one a rheumatic fever, and in two a history of trauma).

The results of this study were rather more striking than we had anticipated, for out of 100 cases were found only twenty-six with perfectly normal spines (Cases 1 to 26), while six more are classed as doubtful (Cases 27-32).[4] The remaining sixty-eight cases had spinal abnormalities of some kind, and of these all but four were of a type which we have learned to consider more or less characteristic of syphilis.

As to the nature of these arthritic lesions occurring in syphilis, we distinguish, as already indicated, the infectious and the toxic type. The latter form is of the nature of what is often called arthritis deformans, hypertrophic and villous lesions being present, and less often atrophic changes. Usually many joints are involved, the spine being among the commonest. In such a case the spine is more or less uniformly stiff, and the Roentgen ray will usually show the characteristic osteophytes of hypertrophic joint-disease.

Of the infectious type, two forms are easily distinguishable. One is destructive, presumably a gummatous formation in the vertebral body (in other joints at the epiphysis), leading to a picture which closely resembles tuberculosis, and which, we feel sure, is commonly diagnosticated as such.[5]

In this paper we shall not go into a detailed description of the toxic or of the gummatous varieties, since they have been accurately described by many observers.

The second form of the infectious type, however, seems to have escaped almost unnoticed, and deserves more careful consideration. This form consists in a synovitis without destructive change. As occurring not uncommonly in the knees of congenital cases, this lesion has been long recognized; but the main contention of the present paper is its commonness in other joints, especially those of the spine, and its occurrence in acquired syphilis as well as congenital.

In the spine this process attacks the synovia of the various spinal joints, leading at first to lessened motion from spasm, but as the acuteness of the process subsides, adhesions are usually formed which limit motion, and in many cases give complete fixation. As far as can be judged, these adhesions are permanent, and are entirely unaffected by antisyphilitic treatment. They may, however, be broken up by forcible manipulation, a measure which we have often advised when there was enough deformity to give a faulty posture with strain.

When stiffening occurs, either from spasm or from adhesions, there is likely to be a characteristic deformity which may suggest an early form of Pott's disease. This may be either a slight prominence of the spines, a flattened area, or even a shallow depression. The question of whether the deformity is to consist of a forward or a backward bowing is largely dependent on the natural curves at the area involved, and the consequent directions of strain. But the suggestion is here tentatively made that a second factor may be operative, namely, that the flexor spasm may predominate in case the process involves chiefly the intervertebral joints, and the extensor spasm where the articulations of the laminae are the main seat of trouble. The former would tend to produce a convexity, the latter a concavity of the spinal outline. Perhaps the most characteristic single type of deformity is a prolongation of the dorsal curve into the dorsolumbar region, where a concavity is normal, or a flattening at this level. It is also to be noted that deformity may be altogether absent until tests of mobility show an area of more or less complete fixation.

It appears that the spine offers ideal conditions for the formation of permanent adhesions, being composed of a series of joints which interplay and functionate in concert. In case one part of this complex is immobilized by spasm, its function can be completely taken over by neighboring parts, and the affected joints are thus allowed to remain fixed until the adhesions have become permanent. On the other hand, in such joints as the knee or wrist it is impossible to shift function in this way, and feeble adhesions from a low-grade process are almost inevitably broken down.

It is characteristic of this condition that only a limited number of vertebrae are involved as a rule, thus distinguishing this form of stiffness rather sharply from osteo-arthritic changes, which in general are likely to be pretty evenly distributed throughout the back. Reference to Table 2 will show that the stiffness frequently affects only three or four vertebrae, though the commoner occurrence is in from six to eight, and sometimes the whole dorsal region, or even the whole spine is affected. Thirty-six of the 100 cases have lesions rather strictly limited in extent (Cases 33-68); twenty-five have a distinct localization, and in addition a lesser or greater stiffness of the whole spine (Cases 69-93). The localized areas we believe to be always of the infectious type; the general stiffness may be a lesser grade of the same infectious process, or may represent a (toxic) osteo-arthritis of the spine on which is superimposed the infectious local process. Some of the cases (71, 81, 88, 92) have more or less well-marked osteo-arthritis or other joints to suggest that the spinal process is also toxic.

The active synovitis is a relatively early manifestation of the disease. Cases 35, 37, 45, 47 and 68 are examples of this early occurrence. On account, however, of the persistence of the adhesions which so frequently follow, the characteristic deformity and stiffness appear to remain throughout life. For this reason they are found in numerous cases in which the disease occurred years before, the Wassermann is negative, and there is every evidence that syphilis as an active disease is abolished. This fact adds to the value of these lesions in the diagnosis of syphilis.

4. It is suggestive that nineteen of these patients had had early treatment: in two cases indifferent, in seven considerable and in ten vigorous.

5. Closely allied to this group is the Charcot joint in tabes, which Eloesser of this city has duplicated experimentally by traumatizing a joint whose posterior nerve roots had been cut. We suspect that in some of these cases there may be, on occasion, an actual invasion by the *Spirochaeta pallida*, giving a mixed clinical picture, so that it is at times impossible to be sure whether the lesions are gummatous or purely neuropathic in character.

namely, that it is found in old syphilitics, when every other evidence of the disease may be lacking.

Pain is usually not a prominent symptom even in the early (active) cases, though we believe that a large part of the backache and "rheumatic pains" of secondary syphilis may be explained on this basis. As compared to tuberculosis, the pain on motion and the sensitiveness, as well as the consequent spasm, are not striking, even in case of destructive lesions. Roentgenograms of the spine in the synovial form are practically negative, showing no appreciable bony change in either early or late stages.

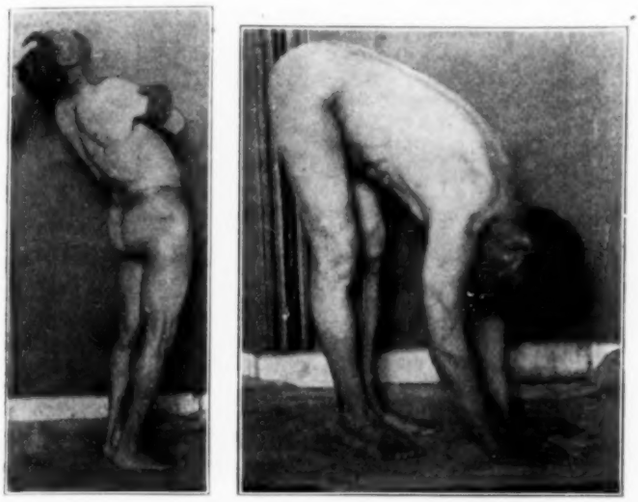


Fig. 1.—Case 90. Tabes. General spinal stiffness, most marked in upper dorsal region. Showing maximum hyperextension possible, also marked hypotonicity (see Fig. 2) which allows patient to put palms to the floor, and even to bend elbows, with knees kept straight.

There is one more striking characteristic of these cases. This is a frequently occurring hypotonicity of the ligaments and muscles of the uninvolved portions of the spine, and notably of the sacro-iliac joints and the hips. Out of thirty-six patients with sharply localized processes, but otherwise normal spines, eighteen could touch the floor with their fingers, keeping the knees straight (Cases 51-68). Of twenty-five patients with general as well as localized stiffness, eleven could do the same (Cases 83-93). Of seven patients with evenly distributed spinal stiffness, two could touch the floor (99 and 100). Not a few of these could put palms to the floor, and two or three could then bend their elbows, still with straight knees. The usual tests for sacro-iliac relaxation were invariably positive in these cases of hypotonus.

This hypotonicity was described years ago by Frenkel as a sign of tabes, and it will be observed that several of the present series which had the most marked hypotonus were cases of tabes or cerebrospinal syphilis. But this is by no means exclusively a characteristic of the cases with nerve syphilis. Instead of calling it with Frenkel a sign of tabes, we are inclined to call it a sign of syphilis, which is usually more marked in nerve cases. It is also to be remembered that a considerable degree of hypotonicity, to the extent, at least, of the ability to touch the floor easily, is by no means uncommon in normal people, and therefore cannot, when alone, be considered pathologic.

The characteristic thing is not the hypotonicity alone, but this combined with a stiff back, or with a back showing areas of restricted mobility. This combination of the two findings we have long regarded as almost sure proof of syphilis, and it is one of the points which we especially desire to emphasize in this paper, that in this we have a pathognomonic sign which is of quite as much interest to the general diagnostician as to the orthopedist. The abnormalities here described are easy to demonstrate, especially after a little practice, and we have long felt that the routine examination of the spine as a part of the general examination deserves more general adoption.

In addition to the series of cases of syphilis examined, it was felt that a series of negative controls was also called for. Twenty-five patients were examined, who were thought to be certainly nonsyphilitic, and the lesions which we consider characteristic were found in none of them. At the same time, it was recognized that it is more difficult to assemble a series of known normal patients than one of proved syphilitics. A certain number of cases had to be excluded from both series because syphilis could not be absolutely proved on the one hand, or definitely excluded on the other. Of these rejected cases, a certain number had localized stiffness with or without hypotonicity, but no single patient was encountered with this finding who did not also show some other suggestion of syphilis. The impression gained from our experience with this sign in the last several years is strong that the combination here described is at least rare in nonsyphilitic persons.

For the purposes of the present study we felt obliged to consider the Wassermann reaction as the deciding factor in the diagnosis of syphilis, cases being excluded from the positive series if the reaction was negative, unless the other evidence was indisputable. We feel no doubt, however, that we have thus excluded a considerable number of syphilitic cases. O'Reilly[2] agrees with Wysocki that the diagnosis of bone and joint syphilis must depend on the Wassermann test, and this represents the usual teaching. From this opinion we must strongly dissent. Apart from the results of treatment, we believe that a considerable number of cases of bone, and especially of joint, syphilis give a negative reaction. Thus, in the past year one of us (W. I. B.) has seen four cases of tibial osteoperiostitis with repeatedly negative Wassermann, which showed a

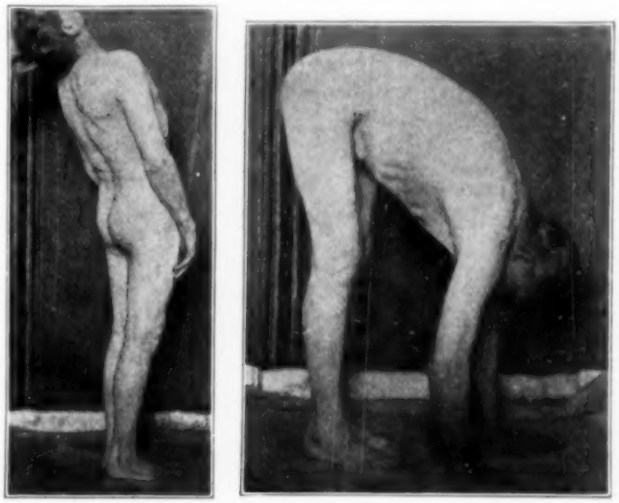


Fig. 3.—Case 66. Tabes. Marked stiffness ninth dorsal to first lumbar; fair mobility elsewhere. Showing maximum hyperextension and hypotonicity (Fig. 4).

TABE 2.—SUMMARY OF FINDINGS IN 100 SYPHILITICS

Case No.	Hospital No.	Sex*	Age	Spine†			Other Joints	Hypotonicity‡	Probable Duration	Early Treatment	Wass. Reaction¶	Remarks
				Cervical	Dorsal	Lumbar						
1	2917	♀	32	0	0	0	0	0	12 yrs.	0	+	Keratitis.
2	505	♂	33	0	0	0	0	0	8 yrs.	++	+	Treated at U. C. H. from start.
3	3567	♂	42	0	0	0	0	0	20 yrs.	0	+	Cerebrospinal syphilis.
4	1513	♂	32	0	0	0	0	0	11 yrs.	0	++	
5	670	♂	32	0	0	0	0	0	7 yrs.	++	+	
6	12464	♀	36	0	0	0	0	0	18 yrs.	0	++	
7	4721	♂	26	0	0	0	0	0	3 yrs.	++	++	
8	13303	♂	26	0	0	0	0	0	6 wks.	++	+++	Primary; treated at once.
9	8286	♂	36	0	0	0	0	0	7 yrs.	Little	+++	
10	14344	♂	28	0	0	0	0	0	3 mos.	+	+++	
11	12013	♂	44	0	0	0	0	0	16 yrs.	+	±	Undoubted history.
12	14055	♂	30	0	0	0	0	0	4 wks.	0	+++	Primary; untreated.
13	11497	♂	29	0	0	0	0	0	14 yrs.	+	+	Pills. Three years.
14	12896	♂	35	0	0	0	0	0	2 mos.	++	+++	Vigorously treated since primary.
15	14001	♂	43	0	0	0	0	0	19 yrs.	+	++	Pills. Three years.
16	12118	♂	38	0	0	0	0	0	15 yrs.	+	+++	
17	6851	♂	31	0	0	0	0	0	2 mos.	++	+	
18	10006	♂	32	0	0	0	0	0	6 yrs.	0	None	Undoubted history.
19	11173	♀	33	0	0	0	0	0	12 yrs.	0	+++	
20	14870	♂	30	0	0	0	0	++	3 mos.	0	+++	
21	10508	♀	32	0	0	0	0	++	18 mos.	+	+++	
22	12583	♂	36	0	0	0	0	+	14 yrs.	+	—	General paralysis.
23	13981	♀	16	0	0	0	0	++	4 mos.	0	+++	
24	1129	♂	23	0	0	0	0	++	3 yrs.	++	±	Treated at U. C. H. from start.
25	10308	♀	30	0	0	0	0	+	1½ yrs.	0	None	Syphilid.
26	10990	♂	48	0	0	0	0	+	27 yrs.	0	+++	
27	13328	♂	38	0	Sl. 8-9	0	0	0	6 yrs.	Little	+	
28	357	♂	36	0	Sl. 4-9	0	0	0	9 yrs.	++	+++	
29	10837	♂	15	0	Sl. 9-11	0	0	0	6 mos.	++	+++	Primary; treated vigorously.
30	11728	♀	21	0	Sl. 8-11	0	0	0	5 mos.	++	+++	Primary; treated vigorously.
31	957	♀	32	0	Sl. 7-12	0	0	0	3 yrs.	0	++	
32	604	♀	47	0	Sl. 2-6	0	0	+	2 yrs.+	0	+	
33	12222	♂	44	0	++ 8D-1L	(2-5) 0	0	0	8 yrs.	0	++	
34	13346	♀	54	0	++ 7-11	0	0	0	20 yrs.	0	None	Gumma of leg.
35	10981	♀	20	0	++ 7-12	0	0	0	6 mos.	0	+++	
36	9554	♂	35	0	+++ 9-11	0	0	0	8 yrs.	0	+++	
37	5513	♂	31	0	++ 3-10	0	0	0	1½ yrs.	+	+++	Salvarsan after primary; nothing since.
38	5115	♀	21	0	++ 3-10	0	0	0	3½ yrs.	0	+++	
39	1415	♂	12	Sl.	+ 3-7 + 12D-1L	(2-5) 0	+	0	Congenital	0	+	Old healed case. Formerly synovitis of knees and destructive lesion of spine. No evidence of activity at present.
40	7212	♂	36	0	++ 6-10	0	0	0	15 yrs.	0	—	Gummata of buttock; rapid healing after salvarsan.
41	2621	♂	56	0	+ 1-6 ++ 6-12	0	0	0	5 yrs.	Little	+++	
42	13184	♂	37	Sl.	Sl. 1-7 +++ 7D-1L	(2-5) 0	Sl. hips	0	14 yrs.	0	++	
43	13411	♂	26	0	+ whole ++ 3-7	0	0	0	9 yrs.	0	+	
44	9630	♂	56	(1-4) 0	++ 5C-3D 0 4-12	0	0	0	50 yrs.	0	None	Late syphilid; undoubted history.
45	14068	♂	19	0	+ 4-10	0	0	0	2 mos.	0	+++	Primary and roseola.
46	12980	♂	13	0	++ 2-8	0	0	0	Congenital	0	+++	
47	13035	♂	25	0	++ 3-11	0	0	0	3 mos.	0	None	Syphilid.
48	14181	♂	22	0	++ 5-10	0	0	0	5 yrs.	0	++	
49	13520	♀	28	0	+ 6-8	0	0	0	?	0	++	
50	2748	♂	50	0	+ 1-6 ++ 6-11	Sl.	0	0	4 yrs.	+	+	
51	10192	♀	41	0	+ 1-12	0	0	++	19 yrs.	0	+++	
52	5057	♂	34	0	Sl. 1-5 +++ 5-11	0	0	+	10 yrs.	0	+++	
53	15029	♂	64	0	++ 5-11	0	0	+	11 yrs.	+	+	
54	1250	♂	48	Sl.	++ 7-11	0	0	+	17 yrs.	+	+++	
55	11842	♂	41	0	+ 1-8 ++ 9-12	+ 1-5	0	++	15 yrs.	0	+++	Cerebrospinal syphilis.
56	12082	♂	29	0	+ whole ++ 6-10	0	0	+	5 yrs.	0	+++	
57	3916	♂	31	0	+ whole ++ 6-10	0	0	++	2 yrs.	++	+++	
58	6665	♂	34	0	++ 5-10	0	0	++	2 yrs.	++	None	Treated U. C. H. since primary.
59	2204	♂	31	0	++ 9-11	0	0	+	14 yrs.	Little	+	Tabes.
60	2403	♀	25	0	+ 1D-2L ++ 2-7D	(2-5) 0	0	+	6 yrs.	0	+++	
61	5227	♀	22	0	++ 4-8	0	0	+	2 yrs.	0	+	
62	1338	♂	45	0	+++ 6-10	Sl.	Sl. hips	+	— yrs.	0	++	Cerebrospinal syphilis.
63	5674	♂	30	0	+ 7D-1L	(2-5) 0	0	+++	11 yrs.	0	++	Cerebrospinal syphilis.
64	14023	♀	27	0	+ 5-8	0	0	++	6 yrs.	0	+++	
65	3489	♀	37	0	+ 7-12	0	+	+	18 yrs.	0	+	Synovitis of knees and elbows.
66	13340	♂	45	0	++ 9D-1L	(2-5) 0	0	+++	16 yrs.	0	+++	Tabes.
67	6276	♀	48	0	++ 4-10	Sl.	0	+	30 yrs.	0	++	
68	11455	♀	26	0	+++ 4-8	0	0	++	15 mos.	0	+++	
69	11827	♀	36	Sl.	++ 1-12	+++ 12D-3L	0	0	14 yrs.	0	+++	Possible early tabes.
70	14971	♂	35	Sl.	++ 1-5 +++ 5-12	+	0	0	7 yrs.	+	—	Undoubted history.
71	3929	♂	49	Sl.	Sl. 1-6 +++ 6-11	+	+	0	13 yrs.	0	+++	Arthritis of almost all joints, most marked of hands.
72	13061	♂	58	0	++ 1-6 +++ 7-12	+	0	0	5 yrs.	Little	—	Undoubted history.
73	9758	♂	40	Sl.	+ 1-5 ++ 6-11	+	0	0	?	0	+	Gumma of clavicle.
74	5417	♂	42	Sl.	Sl. 1-6 ++ 7-12	+	0	0	?	0	++	
75	12572	♂	21	+	+ 1-5 ++ 5-11	++ 1-2 + 3-5	0	0	33 yrs.	Little	+++	Tabes.

* ♀ means female; ♂ means male.

† In these columns 0 means no abnormality found; + means demonstrable stiffness; ++ marked stiffness, and +++ rigidity at the level of the vertebrae whose numbers are given.

‡ In this column 0 means no abnormal hypotonicity; + means that patient could easily touch the floor with finger tips when knees were stiff; ++, patient could touch floor with knuckles; +++, still greater degree of hypotonicity.

¶ The Wassermann report does not always represent condition at the time of this examination; sometimes it is taken from the record of a considerable time before.

TABLE 2.—SUMMARY OF FINDINGS IN 100 SYPHILITICS—Continued.

Case No.	Hospital No.	Sex*	Age	Spine†			Other Joints	Hypotonicity‡	Probable Duration	Early Treatment	Wass. Reaction§	Remarks
				Cervical	Dorsal	Lumbar						
76	9784	♂	46	Sl.	+ 1-4 ++ 5-9 + 10-12	Sl.	0	0	20 yrs.	Little	+ + +	Tabes.
77	5335	♂	34	Sl.	+ 1-6 + + + 7D-3L	+ 4-5	0	0	11 yrs.	0	+	
78	6577	♀	12	+	+ + + 2-6 + 7-12	Sl.	+	0	Congenital	0	—	Roentgen ray shows rarefaction of sacrum and ilia, and destruction of head and neck of left femur.
79	10668	♂	30	+ +	+	+	0	0	?	0	+	Roentgen ray shows destruction of cervical vertebrae 3, 4 and 5.
80	14300	♂	33	Sl.	+ 5-12	+	0	0	?	0	+ + +	
81	1564	♀	60	Sl.	+ 1-5 ++ 5-11	+	+	0	— yrs.	0	+ +	Moderate general osteoarthritis.
82	13852	♂	50	Sl.	++ 1-12	+ 1-3 ++ 3-5	0	0	?	0	+ + +	Thoracic aneurysm.
83	13160	♀	39	0	+ 1-6 + + + 7-12	+	0	++	9 yrs.	0	+ + +	Insane.
84	12891	♂	52	+	+ + + 1-12	+	0	++	16 yrs.	0	—	Tabes.
85	14644	♂	60	Sl.	+ + + 3-10	Sl.	0	+	35 yrs.	++	+	
86	1591	♂	48	Sl.	Sl. 1-4 + + + 5-11	Sl.	0	+	20 yrs.	0	+	
87	37	♂	53	0	Sl. 1-4 ++ 5-10	Sl.	0	+	23 yrs.	+	+	Cerebrospinal syphilis.
88	2006	♂	64	+	++ 1-4 + + + 5-10	+11 D-5L	+	+	— yrs.	0	+	Hypertrophic changes, hips and fingers.
89	12502	♂	56	Sl.	+ 1-5 ++ 6-11	Sl.	0	+ + +	35 yrs.	0	—	Tabes.
90	6980	♂	56	+	++ 3-9 + 9-12	Sl.	0	+ + +	35 yrs.	+	+	Tabes.
91	8802	♂	40	Sl.	+ 1-4 ++ 5-11	Sl.	0	+	22 yrs.	0	+ + +	
92	13139	♂	62	+	+ + + 1-9 + 10-12	0	+	+	37 yrs.	0	+	Hypertrophic changes in fingers.
93	784	♂	50	+	+ 1-5 ++ 6-12	+	0	+ +	15 yrs.	0	None	Tabes.
94	11828	♂	50	Sl. 1-5	++ 6C-2L	+ 3-5	Hips	0	23 yrs.	0	+ + +	Hypertrophic arthritis of hips.
95	1313	♂	58	+	++	++	0	0	16 yrs.	0	+ + +	Roentgen ray suggests gumma of fifth lumbar.
96	17	♂	55	0	+	Sl.	0	0	28 yrs.	+	—	Undoubted history.
97	13580	♂	37	++	+ + +	++	Sl. hips	0	13 yrs.	+	—	Flamboyant case of active synovitis—"poker spine."
98	12411	♀	43	+	++	+	0	0	?	0	+	Probably hypertrophic.
99	710	♂	47	+	+	+	Sl. hips	+	?	0	+	
100	7972	♂	51	+	++	Sl.	0	++	18 yrs.	0	+ + +	

typical clinical and Roentgen-ray picture of syphilis, and cleared rapidly on antisyphilitic treatment. We are sure, on the basis of many observations, that a not inconsiderable percentage of cases of spinal syphilis of the types here described will give a negative Wassermann. Therefore, as far, at least, as treatment is concerned, we are in the habit of paying attention to local and general findings even in the absence of a positive Wassermann. It is here that a general consultant can often be of great assistance to the orthopedic specialist, since the demonstration of any other suspicious signs amply justifies a course of specific treatment in doubtful cases. A brief summary of the findings in the 100 syphilitic patients is given in Table 2.

Recapitulation.—Among 100 unselected cases of syphilis were found:

Twenty-six patients with normal spines, of whom seven showed hypotonicity.

Six patients classed as doubtful, of whom one showed hypotonicity.

Thirty-six patients with sharply localized stiffness, but otherwise flexible spines, of whom eighteen showed hypotonicity.

Twenty-five patients with localized stiffness, and less marked general stiffness, of whom eleven showed hypotonicity.

Seven patients with uniformly stiff spines, of whom two showed hypotonicity.

Nine patients showing evidence of toxic arthritis in other joints.

Three patients with gumma of the spine.

One patient with destructive syphilis of the hip.

CONCLUSIONS

A localized stiffness of the spine is strongly suggestive of syphilis, being present in over half of this series, and rare in nonsyphilitic cases.

Localized stiffness of the spine in conjunction with hypotonicity of the uninvolved spine and the pelvic and hip joints is almost pathognomonic of syphilis.

It is found in obsolete as well as in active cases.

It is a sign easy to demonstrate.

A negative Wassermann reaction should not be interpreted as excluding syphilis in the presence of other signs which suggest joint syphilis.

University of California Hospital.

ABSTRACT OF DISCUSSION

DR. H. W. FRAUENTHAL, New York: In a paper I read before this section last year I made the statement that in my experience in examining orthopedic cases uniformly for syphilis, about 15 per cent. of them gave a positive Wassermann, either blood test or from spinal fluid. This has been borne out by other observers in France, Germany and Sweden. I simply want to refer to an interesting abstract of a paper in THE JOURNAL, June 19, 1915. The characteristic thing about spinal syphilis is the absence of deformity. The characteristics of Pott's disease are absent, while the Roentgen ray shows the increasing tissue, which is also characteristic of periostitis of the spine, and there is not the rarefied tissue from the absorption that occurs in tuberculosis of the spine (Pott's disease). I think there are a great many cases of tuberculous spines which are syphilitic, that is, a great many syphilitic spines and other joints which are treated as tuberculous; but in an institution in which uniform blood and spinal cord fluid tests are made, syphilitic joint disease is quite frequent. I think that if it were a uniform custom in orthopedic institutions to look for syphilis in supposed tuberculous joints, the positive Wassermann test would be obtained frequently. One of the most important things combined with this is the fact that the men who taught, twenty-five years ago, that syphilis and tuberculosis were antagonistic will find that this does not prevail. There is often a tuberculous infection on

a syphilitic base, and in order to cure the tuberculosis, it is necessary also to treat the syphilitic infection. I made this statement about ten years ago in a paper on syphilitic joint disease, before we had blood and serum determinations.

DR. JAMES L. WHITNEY, San Francisco: I had the pleasure of collaborating with Dr. Baldwin in the examination of the series of cases here reported, and should like to emphasize two points as seen by an internist rather than an orthopedic surgeon. The first is the value to both of cooperation between the specialist and the general diagnostician. Many patients are doubtless treated as tuberculous, who might, on the basis of a thorough general examination, be shown to be syphilitic. We have seen not a few such cases which, after long and fruitless mechanical treatment, yielded promptly to specific medication.

The second point is the possible value of the spinal condition as an aid in the diagnosis of syphilis in general. Diagnosticians are constantly on the lookout for signs which point toward syphilis. Of such signs I have found slight irregularities of the pupil especially valuable in directing suspicion toward syphilis. It seems to us, on the basis of this work, that the findings in the spine may prove to be equally valuable in this respect. Over half of our cases of syphilis have this localized stiffness of the spine, and over 30 per cent. have this stiffness combined with hypotonicity of spine and pelvis. The latter finding we believe to be found only in syphilitics, and even in the absence of other confirmatory evidence, including the Wassermann reaction, should be a sufficient basis for antisyphilitic treatment.

DR. D. B. PHEMISTER, Chicago: I should like to ask which portion of the spine shows the localized stiffness, and if Roentgen-ray examination shows bony changes in this region?

DR. CARL C. CRANE, San Francisco: A few years ago it occurred to me that there were many children in the clinics who were returning regularly for braces, splints and various other appliances in whom the diagnosis of tuberculosis had been made. They were not doing well; perhaps they were holding their own; they were pale, thin and inactive. They were given iodids and mercury, and within a fortnight a mother, nearly frantic, came in crying, saying that she could not make Johnny use his crutches any longer; that he was jumping on wagons and walking on his sore hip. The boy, with many others, improved very rapidly, became ruddy, strong and active, and shortly afterward dispensed with his crutches and all other apparatus. This was simply an example of what was observed in many instances of so-called tuberculosis, of the hip in particular, and of other portions of the skeleton in general.

DR. WALTER I. BALDWIN, San Francisco: In answer to Dr. Phemister's question, we have statistics of over 100 cases, collected mostly by Dr. Whitney, which show exactly the localization of the stiffness in the spine. I do not have time today to go into all the different phases of the diagnosis between syphilis and tuberculosis, but I have some lantern slides which illustrate this hip density with rigidity. I can say, however, that it is most common in the cervical region.

Fig. 1.—Subperiosteal resection 65 days old, and bone of opposite side.

Sanitary Survey.—In a report submitted by the United States Public Health Service on a sanitary survey of ninety-six industries and trades in Indiana employing women labor, the following recommendations have been made: Ventilation should be improved by forcing fresh air into all parts of the work room; eye shades or suitable curtains should be used where operators are required to face windows continually, and individual drinking-cups and towels, and the providing of liquid soap were recommended.

SUBPERIOSTEAL RESECTION IN OSTEOMYELITIS

A CLINICAL AND EXPERIMENTAL STUDY *

D. B. PHEMISTER, M.D.
CHICAGO

It has been known since the time of Galen that the removal of a part or all of the shaft of a bone, which has undergone necrosis in osteomyelitis, may be followed by restoration of the missing portion. Scultetus recorded a classic example in 1634, and a little later Delamatte and Vigarous reported regeneration of missing portions of the tibia. No attempt was made to explain the method of regeneration until after the well-known experiments of Duhamel in 1741, showing the important part played by the periosteum in the formation of callus during the healing of fractures. Subsequently it was attributed to the periosteum which, as was noted, was always detached from the shaft and left behind. Isolated reports of cases continued to confirm this view, but no experimental evidence was offered in its support until the important work of Heine, who from 1830 to 1837 performed, in animals, a number of subperiosteal resections of the various bones of the body, with subsequent regeneration of the shaft in a certain percentage of the cases.[1] Stimulated by this work, Langenbeck, who saw Heine's specimens, Larghi and other surgeons performed a number of subperiosteal resections of portions of diseased shaft, and of the ends of the bones in arthritis with varying degrees of success, as regards restoration of the excised portion.

The experiments of Ollier[2] from 1858 to 1867 were the most extensive and important that have ever been made in the field of bone regeneration. He asserted that only the cells of the inner or cambium layer possess osteogenetic properties, and obtained restoration after complete and partial subperiosteal resections of differently shaped and constructed bones, as the scapula, long bones and bones of the face. When the entire length of a long bone was excised, regeneration of the shaft was fairly complete. The epiphyses were incomplete, but sometimes possessed separate centers of ossification, and were separated from the shaft by broad fibrous epiphyseal lines. Where epiphyses alone were subperiosteally resected, regeneration was usually complete.

The bones of the skull afforded a striking exception in that the pericranium and external surface of the dura mater were unable to restore anything beyond very small portions. Infection had different effects according to its extent. If severe, it usually prevented regeneration of the missing portion, but if mild, new

* From the Department of Surgery, Rush Medical College.
* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Loosen: Die Resection der Knochen und Gelenke, 1894.
2. Ollier, L.: Traité expérimental et clinical de la regen des os, Paris, 1867.

bone formation occurred, which was frequently exuberant, owing to the stimulating effects of the infection. Age played considerable part, regeneration being much less constant and extensive in old animals.

Ollier, Syme and others performed many operations on the basis of this work. Nichols[3] of Boston was the first to make a careful study of its clinical application and bring it before the profession in America, where it has since been perhaps more extensively used than in any other country.

Since the appearance of Macewen's work on the growth of bone, in which he asserted that the cambium layer of the periosteum has no osteogenetic function, there has been a great deal of controversy as to the origin of the new bone, not only in the healing of fractures and in bone transplants, but also in inflammatory processes and the restoration of their secondary bony defects. There is a great confusion of ideas as to just what happens. Some believe with Macewen that when a portion of the shaft is missing and the periosteum preserved, the regeneration is from an outward growth of the cells of the ends of the bone into the tube or groove formed by the periosteum, and from any small particles of bone cells which are separated from the shaft and cling to its inner surface. In other words, all of the regeneration is from bone cells. But McWilliams obtained regeneration from the periosteum after subperiosteal resection of entire ribs. Davis and Hunnicutt[4] conclude from their recent experiments that when bone is resected subperiosteally restoration of the defect is by outgrowth from the ends of the shaft, the periosteum acting as a limiting membrane; but if particles of bone are left behind or transplanted into the defect, the periosteum is stimulated by them and takes an active part in the formation of new bone. I believe that bone cells are of importance as a starting point for ossification of the fibrous or fibrocartilaginous callus formed by the proliferating inner layer of periosteum, but the periosteum may also form callus without the presence of bone, being sufficiently stimulated by the demand of the weakened part for bony support.

Fig. 2.—Subperiosteal resection of shaft 52 days old, and normal humerus.

Fig. 3.—Humerus excised subperiosteally in old dog, and regeneration after forty-six days.

There is no uniformity of results after subperiosteal resection either in the healthy bones of animals or in diseased and healthy bones in man. The full explanation for this has not as yet been determined, but there are a number of known factors of importance, chief among which are age, the presence or absence of infection, and the technic of freeing from the bone the periosteum or involucrum which is left behind.

EXPERIMENTAL RESULTS

Regeneration after subperiosteal resection was tested in animals in the following sets of experiments, in which the regions excised correspond to those most often removed in osteomyelitis. The periosteum was removed with a blunt instrument. It comes away from the shaft with ease, but is much more adherent about the ends where the deeper portions are frequently not detached, or chips of bone are removed with it. Separation through the epiphyseal lines was easily performed in very young dogs, but in older ones fragments of metaphyses were usually left behind because of the difficulty of division through the narrow and irregularly curved epiphyseal lines.

1. Subperiosteal resection of the shaft was done in young animals before closure of the epiphyseal lines. Nine operations were done, four on the tibia and six on the humerus. There was a good attempt at regeneration of the tibia in all the animals when they were killed. The youngest was 1 month old at the time of operation. In twenty-six days a small shaft had been restored which was composed of fibrocartilaginous callus with a number of areas of ossification along its course. In a six-months-old dog thirty-one days after resection, a similar regeneration had occurred. The new shaft consisted of a fibrocartilaginous flexible cord, largest toward the epiphyses, with numerous small areas of ossification along its course. These may have started from scattered remaining bone cells, but the columnar mass of callus which was ossifying was so large that it must have formed largely from the periosteum.

Figure 1 is of a specimen from a five-months-old dog sixty-five days after operation in which the entire shaft was removed, and no visible particles of bone were left between the two epiphyseal cartilages, although there may have been a few about the ends. The separate areas of ossification are much larger than in the preceding experiment, and many have already fused. Those remaining are separated from each other by narrow bands of fibrous or cartilaginous callus.

It seems incredible that one should doubt the participation of the periosteum in the formation of the largely ossified middle portion, which has no bony connection with either end, or to assume that this entire mass formed from bits of remaining bone cells too small to be detached at operation.

3. Nichols, E. H.: Acute, Subacute and Chronic Infectious Osteomyelitis: Its Pathology and Treatment, THE JOURNAL A. M. A., Feb. 13, 1904, p. 439.

4. Davis and Hunnicut: Am. Surg., 1915, lxi, 672.

One tibial resection in which extensive suppuration occurred showed at the end of twenty-eight days only a small amount of partly ossified callus near the upper end. The fibula in each experiment underwent marked compensatory hypertrophy.

Of the six experiments on the humerus, two were in pups 3 weeks old and were followed by the formation of a small irregular and shortened, largely ossified shaft at the end of thirty-five days. All visible traces of bony shaft were excised. In a 6-months-old animal, all of the shaft was removed except portions of the metaphyses at either end. At the end of fifty-two days there was a newly formed irregular shaft about one-fourth shorter but much greater in diameter than the normal humerus on the other side. (Fig. 2.) Separate centers of ossification are seen which have so fused that the bone is quite firm, thus enabling the animal to regain considerable use of the limb. In three other animals, forty, sixty-eight and eighty days after the resection in which portions of the metaphyses were left, there was marked shortening and little attempt at regeneration. Only a few spicules of new bone were present, with free mobility at the seat of resection.

Fig. 4 (Case 1). — Regeneration at end of three months.

It is difficult to explain the differences in results, as infection was either absent or very slight in all of the cases, and the periosteum was always removed in much the same manner. More osteogenetic tissue must have been left in the cases in which regeneration occurred.

2. Subperiosteal resection of the humeral shaft in five old dogs was followed by a failure of restoration of the shaft in every case. The experiments were 21, 39, 54, 65 and 78 days old, and in none was there new bone formation to any extent. The remaining ends came close together, markedly shortening the limbs, and in the oldest experiment were united by partly ossified callus.

3. Subperiosteal resection of an entire bone was performed in two instances. In a 4-weeks-old pup the entire tibia was removed with portions of periosteum about the lower end which were not separated. In twenty-seven days there was a large irregular, partly ossified, newly formed bone filling in the defect, except at the lower end where periosteum was removed. It had no separate epiphysis at the upper end. In an almost full-grown dog in which the humerus was examined after forty-six days, there was a flail limb with marked shortening and only a few nodules along the course of the excised bone (Fig. 3). Mild infection occurred, and a small pocket of pus was present when the limb was dissected.

4. Subperiosteal resection of the shaft with reimplantation of a support into the defect was performed for the purpose of determining the influence of the insert on osteogenesis of the surrounding sheath. When a live transplant was used, as previously demonstrated, there was new bone formation both from the transplant and from the periosteum, which soon anchors the transplant into its new position. In fifteen animals, the shaft of the bone (either tibia or humerus) was boiled and reimplanted, but in every instance there was more or less infection with fistula formation which either killed the animal or necessitated the removal of the too extensive implant in from one to three weeks. Boiled wooden pegs were substituted for the bone in seven cases, but always with resulting infection. Dissection always showed the insert free in a suppurating canal with a thickened wall which on microscopic examination consisted of necrotic inflammatory or granulation tissue without any traces of callus. Two animals in which the infection was less severe at the onset remained alive and were killed at the end of two months. The dead shaft was easily extracted in each case, and the surrounding infected periosteal layer had produced only a few small nodules of bone along its course. Evidently the infection destroys the remaining osteogenetic cells and consequently interferes with the regeneration. In one nearly full-grown animal, about one third of the boiled shaft of the humerus was split off and reimplanted. It healed in without infection in an oblique position with the upper end protruding beyond the epiphysis, and when the animal died at the end of a month there was a well-developed shaft formed about the implant and along the course of the periosteum. If it were not for the extent of the foreign body implanted, which so predisposes to infection, regeneration of the shaft might be hastened by the supporting action which is contributed.

A review of the gross and microscopic findings shows that after subperiosteal resection of the shaft in young animals, the tube of periosteum partly collapses, and is filled with a blood clot. The cambium layer of the periosteum, if removed, usually proliferates and forms an irregular column of callus along the course of the shaft. Proliferation also occurs from any particles of bone that were detached and from the fragments of metaphyses, if they are not entirely excised. Conversion of fibrous and cartilaginous callus into bone proceeds from the bony surface in the healing of fractures, and ossification of the callus, that is, transformation of its cells into bone cells, in these experiments, probably begins about small bits of attached bone; but this does not mean that all the mass of fibrous and cartilaginous cells originated from the bits of bone. Histologic study shows them to come from the periosteum, and the great bulk of them to be transformed into bone cells. It also appears that centers of ossification develop in this cartilage independent of fragments of bone, just as they do in the embryonal cartilage which preforms bone. Sections through some of these areas fail to show the presence of old bone.

Fig. 5 (Case 1). — Irregular new shaft with its cortex and medullary cavity at the end of two years.

In the light of all the confronting evidence, it is difficult to understand the contention that periosteum is only a limiting and osteoconducting membrane, and that its inner layer of unossified cells does not possess osteogenetic properties. Growth of bone from the ends was impossible in some of the experiments in which all of the shaft was removed, and the ends were limited by epiphyseal cartilage through which growth normally occurs from the shaft in the other direction, increasing the length of the bone by enchondral ossification. Also it could hardly be expected that a tube

of fascia lata containing a few bits of bone would give the same results if substituted for the remaining periosteum. Failure of regeneration occurred especially when the degree of infection was severe, as in cases in which the boiled shaft was implanted, owing to destruction of the remaining osteogenetic portions, and also in old animals in which less osteogenetic tissue is present about the periphery of the bone.

CLINICAL OBSERVATIONS

Clinical observations conform to a certain degree with the experimental results, although there is considerable difference between the resection of a shaft in a healthy dog and in human osteomyelitis. Subperiosteal resection of the noninfected shaft in young persons is followed by regeneration from the remaining periosteum and not by outgrowth from the ends of the bone.

Fig. 6 (Case 2).—Excised tibial shaft, showing necrotic portion.

CASE 1.—A girl of 10 had a cartilaginous exostosis of the upper end of the humerus for which a subperiosteal resection of 4 inches of the shaft to the epiphyseal line was performed. A strip of periosteum was removed laterally in the region of the tumor. Figure 4 shows the amount of regeneration at the end of three months. The irregular new shaft was formed from cells of the remaining periosteum, since its upper and lower ends differ little in size, and downward growth from bone at the upper end which was limited by cartilage was impossible.

Figure 5 shows the irregular new shaft with its cortex and medullary cavity at the end of two years.

Fig. 7 (Case 2).—Twenty-one days after subperiosteal resection.

Davison[5] reports a similar case in which 4 inches of the fibula which had been resected subperiosteally for use as a transplant was completely regenerated at the end of ten months.

In osteomyelitis, the inflammation, which usually starts in the end of the shaft, results in necrosis of trabeculae and pus formation in the medullary cavity, necrosis and penetration of a variable amount of the length and circumference of the cortex, and subperiosteal pus formation with more or less extensive separation of periosteum and perforation into the soft parts.

These destructive changes are soon accompanied by reparative processes. Proliferation occurs in the medullary cavity at the ends of the involved segment, and from any portions of marrow or cortex along its course which have not been killed by the infection. It also occurs along the surface from the periosteum and bone of the regions in which the cortex is not necrotic, and from some of the periosteum lifted up by the pus *after* it has perforated and escaped into the surrounding soft parts. More or less extensive areas of periosteum may be destroyed by the infection, in which case the underlying dead cortex is left without a covering. This encasing mass of osteogenetic tissue or involucrum is fibrous at first, but soon begins ossification in its deeper portion, in the region where it overlies living bone, and in two or three weeks its inner layer of spongy bone is demonstrable with the Roentgen ray.

In case the entire circumference of cortex is destroyed for a distance of from 2 to 4 inches, the surviving portions of periosteum nearly always form an involucrum about it, subsequent total defects after removal of the dead portion being unusual. Ossification of the newly formed involucrum proceeds rapidly from within outward, and is completed in from six to fifteen weeks, depending on the size of the bone and the duration of the acute inflammation. A little less time is required for sequestration of the necrotic portions.

Every case of osteomyelitis should be treated at the beginning by incision of soft parts down to the bone, and excision of a strip of the diseased cortex to establish drainage of the medullary canal.

After subsidence of the acute inflammation and the appearance of the involucrum, the method of getting rid of the necrotic bone must be decided on. In many mild cases, it is absorbed and no further operating is necessary. In others, the necrotic portion is definitely circumscribed and accessible, so that sequestrectomy is clearly indicated. Only in severer cases, in which the necrosis is extensive, does subperiosteal resection come into consideration. Its advantage is that, if regeneration is successful, the entire necrotic portion is removed, the occurrence of fistula and chronic bone abscess is avoided, and the disease is permanently healed as soon as restoration of the shaft is complete.

Fig. 8 (Case 2).—One hundred and twenty-three days after operation.

Its disadvantages are that (1) there is frequently a failure of regeneration of the shaft, leaving a defect to be treated by subsequent bone transplantation; (2) convalescence is much longer than in favorable cases of sequestrectomy, owing to the greater amount of time required for regeneration of the shaft; (3) when there is only one bone in the extremity, considerable shortening and curvature may be the result; (4) it cannot be used in late cases.

Failure of regeneration, while sometimes difficult to explain, is due chiefly to the fact that an insufficient amount of osteogenetic tissue is left, or to its destruction by the infection. Early removal of the shaft before the formation of the periosteal thickening and

5. Davison: Tr. Chicago Surg. Soc., 1915.

during the height of the infection is particularly apt to be followed by failure of regeneration.

The most favorable time to perform the resection is between the third and eighth weeks according to the case, after the infection has subsided and the soft involucrum has formed. It should be after ossification has started, but while the involucrum is pliable. As much as possible of its spongy, ossified portion should be removed by means of a sharp chisel, as it hypertrophies and aids in the ossification of the fibrous involucrum, similar to the action of the bone cells and chips along the periosteum in the subperiosteal resections in dogs. However, failure of regeneration after resection during this period is not seldom, as shown by the reports of Clopton and Nicholls.[6]

The following case illustrates the successful use of this method:

CASE 2.—A girl, aged 3 years, had been sick for twenty-three days with an osteomyelitis, involving the entire length of the tibia, resulting in pus formation at either end, which was drained at the end of one week. There was still considerable discharge and a temperature of 102 F. A small amount of ossification was present in the periosteal thickening, which extended along the entire length of the shaft. An incision was made from one epiphysis to the other, and the thickened periosteum easily reflected anteromesially where an irregular strip of cortex was necrotic along the entire length of the shaft. Laterally and posteriorly, the involucrum was ossified over the living cortex and was separated with more difficulty. The shaft was sawed in two in the middle and the halves extracted. Drainage tubes were inserted at the ends, and the wound closed.

Fig. 9 (Case 3).—Excised portion of shaft.

The excised shaft (Fig. 6) shows the smooth, anterior necrotic portion which is separated from the living bone at its margins by a groove filled with granulation tissue. The living portion is covered by a thin layer of spongy involucrum, which was not all removed by the periosteotome. The medullary canal showed some pus along its course. There was considerable suppuration for a few days following the operation, after which improvement was rapid. Two small fistulas persisted at the upper and lower ends, which closed after curettage at the end of three months. Figures 7 and 8 show the amount of regeneration twenty-one and 123 days following the operation. The child has been walking on the limb since the fourth month, and recovery is complete without shortening at the end of two and three-fourths years.

If resection is attempted late after the involucrum is too thoroughly ossified, great difficulty will be encountered in removing the deeper portion of the periosteum from the roughened surface, and few unossified osteogenetic elements will be left. Consequently, there is very apt to be failure of regeneration, as illustrated by the following case.

CASE 3.—A boy, aged 16 years, had osteomyelitis of the lower end of the fibula of nine weeks' standing, with abscess formation which had been opened and drained. At operation the large involucrum was found to be rough and ossified, so that it was difficult to remove much of the periosteal covering, which was gotten off as best possible by means of a periosteotome. About 6 inches of the shaft was removed down to the epiphyseal line (Fig. 9). The wound, which was drained, healed in four weeks with little discharge.

After one month the boy began using the limb, which has since remained well and strong. Figure 10 shows the condition at the end of two years, with a defect of the fibula about 4 inches in length. Fortunately, the malleolus is preserved, and it makes no difference to the patient.

The cause of the failure is easily determined when the excised specimen is examined. Its surface is very irregular and the involucrum is extensively ossified. Microscopic sections from the cortex show that while the periosteum in many places was left, in most places it was removed with the specimen. This was due, to some extent, to the irregularity of the surface; but by vigorous use of a sharp instrument, more osteogenetic tissue could have been left. However, it is a question if such a thin layer, which had already undergone extreme hypertrophy, could have formed a new shaft.

Verifying the results of animal experiments, osteomyelitis in adults is less suited for subperiosteal resection than in children.

CASE 4.—A man, aged 45, had pneumonia which was followed by osteomyelitis of the tibia. Four months after the onset a surgeon removed subperiosteally two-thirds of the lower end of the bone, including the epiphysis. The wound had healed except for a small fistula when first seen at the end of nine months. Figure 11 shows the small amount of irregular new bone which had formed along the course of the periosteum. The late date (four months) at which the resection was performed, as well as the age of the individual, was responsible for the failure of regeneration.

Fig. 10 (Case 3).—Two years after excision.

In view of the clinical and experimental data now at hand, showing the frequent failure of regeneration, subperiosteal resection should be reserved for selected cases of osteomyelitis in which there is extensive necrosis of bone, and particularly when it is located in areas inaccessible to operation, as the posterior part of the tibia. Its use should be limited to parts of the body in which there is some other bony support, and should almost never be used where there is only one bone in the extremity, as later sequestrectomy gives better results in such cases.

The operation should not be performed too early while the infection is severe, and before a soft involucrum has formed, nor too late after the involucrum is so ossified that an insufficient amount of osteogenetic tissue is removed.

In case of failure of regeneration, the defect can best be repaired by free transplantation of bone, although a missing shaft of the tibia can be remedied by division of the fibula above and below and shifting it into the tibial defect, a method which was first used by Huntington.

122 South Michigan Avenue.

6. Clopton, M. B.: The Diagnosis and Treatment of Osteomyelitis. Surg., Gynec. and Obst., 1915, xx, 6.

ABSTRACT OF DISCUSSION

DR. THOMAS W. HUNTINGTON, San Francisco: With but a small personal experience, I do not seem to be in accord with prevailing opinions, as set forth by Dr. Phemister. In about 50 per cent. of the cases in which I have attempted subperiosteal resections in osteomyelitis my results have been unsatisfactory. The reason for this has been the presence of infection of more or less severity at the time of operation. In a single case I avoided this procedure by resorting to bone transference, substituting the fibula for the tibia. The case is in the literature, and the method has been followed by several other surgeons with uniform success. In my own case the result is ideal; the young man has grown to adult life and suffers no inconvenience whatever from his former trouble. One feature is of considerable interest, namely, that the transferred fibula, carrying with it its own nutrient artery and receiving an exaggerated nutrition from the remaining fragments of the tibia, hypertrophies rapidly and, ultimately, assumes the dimensions of the normal tibia. The absence of the shaft of the fibula seems not to lower the efficiency of the limb to any degree. At the time I made this effort I supposed that the idea was original, but on further search I find that an Italian surgeon, as early as 1860, resorted to an analogous procedure by transplanting the upper end of the fibula into the lower end of the femur. His result was altogether satisfactory.

DR. J. P. LORD, Omaha: In the discussion of Dr. Phemister the statement is made that severe infection will destroy the periosteum. That we grant, but it is my experience and observation that a great deal of this injury to the periosteum has been done by too rigorous treatment, for which the surgeon is responsible, namely, in the too vigorous use of the curet and the too thorough application of strong antiseptics. I will not amplify, but I wish that all the younger men would bear this in mind. I have caused damage myself in this respect. I am now more respectful of the tissues, and my later results are better. The other point I wish to make is that in some of these cases we should simply open the bone. When the medulla is reached, guarded use of the curet should be made. There are some who seem to disregard the endosteum and its functions, and its great power for assisting in the regeneration of bone. Another feature of the treatment which I wish to emphasize is this: Many surgeons continue to pack these cavities with gauze, and also dress these cases with undue frequency. Their patient will have a rise of temperature every time a dressing of this kind is changed. Sometimes I use gauze to control the hemorrhage for the first dressing, but after that (because of considerable experience with children) I minimize the severity of the treatments. Of course, I use the methods which you all use of enfolding the parts and minimizing the cavity. I use iodized petrolatum, 1:1,000, and I keep these troughs filled up with the petrolatum, and regeneration takes place under it and fills the cavity. You can actually do these dressings with a child smiling, and in a perfectly good humor. Now the parting shot I wish to make is a greater consideration for the regenerative power of the periosteum and endosteum, less surgery, and less vigorous treatment with antiseptics. I think that in simple drainage, and more regard for the tissues, we will better serve Nature in her efforts at repair.

DR. LEONARD W. ELY, San Francisco: The presence of a cambium layer of the periosteum I doubt, on the basis of a great many sections of normal and diseased bones. Instead of a cambium layer of periosteum, we find pockets of marrow here and there under the fibrous layer. These pockets of marrow are continuous by small channels in the bone with the marrow in the central canal. Here we get back to the bone-forming function of the marrow. We say that marrow forms bone, but marrow itself is not essential to the formation of bone any more than is an inner layer of periosteum. In studying embryonic bones, we find a cylinder of cartilage transformed into bone by blood vessels pushing into it, carrying their bone-forming cells, and transforming this cylinder of cartilage into bone. Embryonal bone contains no marrow, nor does cartilage that is being formed into bone. Again, in the epiphyses of bones we see bone forming, as it already has formed in the shaft. We see cartilage changing into the bone; but what changes it? There is no marrow there. If we make serial sections of the epiphyseal cartilage, we find from the periosteum, from the marrow, or from the synovial folds, that the vessels are pushing in to the center. When they reach the center, they begin to form bone. Bone is formed by osteoblasts. The osteoblasts are located, in adult life, in the marrow. We do not know an osteoblast by sight. We cannot identify any particular cell as an osteoblast. We say when we see a peculiar appearing cell in a certain locality, "That is an osteoblast"; but by itself we have no way of recognizing it, and we do not know whence it comes. Here is our problem to solve: What is an osteoblast and whence does it come? The osteoblast, whatever it is, manufactures bone out of one of two tissues, namely, cartilage or fibrous tissue. The osteoblast is the active agent. The cartilage or fibrous tissue is the plastic material out of which bone is made. In a fracture of a bone, these marrow cells, whatever they are, do not bridge the gap immediately and manufacture bone, but they manufacture it out of cartilage on the outside, and out of the fibrous tissue which is deposited by the periosteum between the two bone ends.

Fig. 11 (Case 4).—Small amount of irregular new bone along the course of the periosteum.

Macewen put a ring on the outside of a bone under the periosteum, and he finds that bone does not form over this ring. Periosteum, he says, has no bone-forming function; but it has a "bone-forming function." It cannot manufacture bone itself, but it is so much plastic material out of which bone is formed. When he separates it from the osteoblasts, which are located in the marrow, by putting a ring inside it, there is no bone formed on the outside of the ring, because the active bone-forming agent cannot get at the periosteum to manufacture bone. Stones do not build a wall. The mason builds the wall, but he must have stones with which to build it. The osteoblast is the mason.

DR. E. W. RYERSON, Chicago: It is impossible to say too much in commendation of the work Dr. Phemister has been doing to bring a little real knowledge out of the chaos in which all of our conceptions of osteomyelitis have heretofore been plunged. I do not know of any subject, except possibly the time-worn subject of the treatment of tuberculous abscesses, in which so many different things and practices have been current in the past. It is evident that to interfere with osteomyelitis successfully requires certain definite knowledge, which in the past we have not had. Dr. Phemister has been endeavoring to establish a time at which, for instance, a sequestrum should be removed, and a time at which a necrosed shaft should be removed. I have had three cases of successful regeneration of the entire tibia, after its complete removal in old osteomyelitis, and evidently I removed the shaft at exactly the right time. I have had a perfectly complete failure of regeneration in a tibia, where the entire shaft was removed, and it is evident that I removed it at the wrong time. We must study and we must learn a little more definitely the exact time at which to do this work.

About the treatment of acute and subacute osteomyelitis I want to endorse some of the things expressed by Dr. Lord. We must not be too radical with our treatment of osteomyelitis, of which we see so many examples. In the shaft of the tibia, for instance, it should not be too radically treated. An opening in the bone should be made practically the full

width of the tibia, the entire length of the infected area, and not a bit of curetting should be done, nor any antiseptic treatment, even though the medullary cavity be full of pus. Many of us have treated these cavities just as a dentist treats a cavity in a tooth, but that is not the proper way to do. The cavity in a tooth is an entirely and distinctly different entity from that of an osteomyelitic cavity in a long bone. We should simply drain, and drain by a method which is not ordinarily used. We do not sew up any of these incisions. Let them stay open, and do not put a dressing on them—do not put the dressing on the wound, but put the dressing around the wound, and let the entire wound stay open to the air without any dressing on it at all. When the pus fills it up, roll the leg over and let the pus run off into the dressings, and irrigate it with a little normal salt solution. Do not use any iodin or any other antiseptics. Let the patient stay with the leg stretched out on a chair all during the day, in the sun, with no protection whatever over the wound, except a coarse wire gauze protector. When treated in this way, these cases of osteomyelitis heal up almost magically, and I have been astounded to see the rapidity with which these large cavities fill up with bone in the relatively few cases in which I have used this method of treatment in the last six or eight months. It is easily the best thing I have seen yet, and I reiterate what Dr. Lord has said—do not do too much to your osteomyelitis cases. As to the proper time to remove sequestrums, we have not as yet been able to formulate any definite rule.

DR. ROLAND MEISENBACH, Buffalo: I have great respect for Dr. Phemister's work, as I have followed it for a number of years. However, I have also great respect for the endosteum when it comes to bone regeneration. I am not at all convinced that the periosteum proliferates enough to regenerate an entire bone. I believe that in many subperiosteal resections there remains some of the endosteum. I have been impressed with the rapidity of the regeneration of the endosteum on several occasions, and I believe that the endosteum proliferates three to one as against the periosteum. I base my opinion on my own observation in animal experimentation in which I have had occasion to section the cortex of the bone of a large number of animals and examine the sections microscopically. I have been impressed with the number of osteoblasts found in the region of the endosteum, and as the endosteum is so closely allied to the bone marrow, it is easy to see why there is a great regeneration at this point rather than at the periosteum. Since viewing the microscopic sections of cortical bone which Dr. Ely kindly demonstrated to us in the laboratory, I am more convinced than ever before that many of the theories of bone regeneration will require modification. I think the practical regeneration of bone is well shown in the cases of osteomyelitis in which most of the new bone comes from the endosteum and creeps along the sequestrum to meet some of the bone proliferated by the periosteum, thereby often forming an entirely new tibia. I think these cases were placed on record several years ago. In cases in which one has removed the gap in the long bone and in which one bridges over the periosteum, I believe that it is the endosteum that forms most of the new bone of the cortex rather than the periosteum. This brings out an important point, that in osteomyelitis one should not be too anxious to remove the sequestrum formed, because it often acts as a bridge for the newly developing bone. I think the stimulating effect of the staphylococcus on the endosteum accounts for the rapid regeneration in some of the cases, even those that are infected with staphylococcus. What I have said can be shown in sections. I have a series of sections with me which demonstrate the proliferation of bone in relation to the periosteum and endosteum, and make a good study. They have a direct practical bearing on bone-graft work, and if one keeps these in mind, one will know why certain cases do better than others.

DR. ETHAN H. SMITH, San Francisco: In this class of cases I consider the bone curet a necessary instrument at times, but frequently more abused than any other bone instrument in use. Along with the uterine curet, I think that the bone curet is going to be soon curtailed in its use. In operating on these cases we should do a clean-cut operation, with sharp instruments and see what we are doing, and in removing the damaged tissue do it neatly and carefully, with as little bruising, abrasion or rubbing in of pus or debris in the raw surface as possible. I think that rough methods account for a great many disastrous results. The time at which an operation should be begun in osteomyelitis is a big factor in these cases. The doctrine still obtains that we are warned against interfering too soon in infections of bone and we were cautioned not to meddle with these cases until a sequestrum has separated from the sound bone. This change, recognized by old observers, depends on the virulence of each case. The remarks of Dr. Ryerson about the proper method of opening and draining these cases are particularly timely and good, and I endorse that idea exactly.

DR. J. T. RUGH, Philadelphia: One point in regard to these grafts which are placed for deficiencies of various types is that the graft itself presents a certain degree of resistance and immunity toward infection. Various forms of infection influence the graft differently, that is, a graft will have a certain degree of immunity toward one type of infection while with another type it will break down and absorb rapidly. Further investigation and work along this line will show us a wider field of usefulness for the bone graft in the presence of infection and that we shall be able to utilize the graft as a stimulant to the proliferation of new bone in many cases in which some of the periosteum has been preserved, as in subperiosteal resection.

DR. D. B. PHEMISTER, Chicago: My conception of the composition of the shaft of a bone is as follows: It consists of a cortex of more or less compact bone in which are canals containing blood vessels and some connective tissue cells. Its medullary cavity is lined and filled by a loose connective tissue reticulum in which are contained the bone marrow or hemopoietic cells and fat in varying amounts, depending on the age and particular bone. This connective tissue reticulum is known as the endosteum. The bone is surrounded by a connective tissue covering which consists of an outer thicker portion of white fibrous tissue and of an inner layer along the bony surface, of loose richly cellular tissue. This covering is known as the periosteum and the inner layer, which is thickest during the period of growth, as the cambium layer of the periosteum. New bone growth and bone repair occur by the proliferation and ossification of the cells of these three portions, namely, the endosteum, the cells of the canals of the cortex and the cambium layer of the periosteum. They are known as osteogenetic tissues and their cells as osteoblasts. The bone cells, which are situated in lacunae and closely surrounded by an abundance of lime salts, do not multiply to any appreciable extent. To speak as Dr. Meisenbach does of that portion of the osteogenetic tissue lying outside of the medullary canal as endosteum is a misnomer.

I have tried to show in these experiments that the loose cellular layer lying on the bony surface and known as the cambium layer of the periosteum, if left behind in subperiosteal resections proliferates and plays an active part in the regeneration of the shaft. In osteomyelitis the cells of this layer as well as those of the canals of the living portion of the cortex proliferate and form an involucrum about the shaft which at first is soft, but which soon ossifies. In those cases in which a subperiosteal resection seems advisable it is best done not too early, while the infection is severe, and before the soft involucrum has formed; nor too late, after the involucrum has sufficiently ossified that it cannot be stripped away from the shaft. In either case there is apt to be too little osteogenetic tissue left to regenerate the shaft.

Visiting Nurses for Smaller Cities.—To say every city above 5,000 should have a visiting nurse does not imply that they are impracticable for smaller cities. There is no reason why with our new knowledge, the nurse should not supplant the old sanitary inspector, certainly the old time contagious inspector.—Pub. Health Com. Minnesota Pub. Health Assn.

NOTES FROM A GERMAN MILITARY HOSPITAL, WITH OBSERVATIONS ON GAS PHLEGMONS*

L. ELOESSER, M.D.
Assistant Professor of Surgery, Medical Department, Stanford University; Surgeon to Reserve Lazarett IV, Karlsruhe, Baden, Germany

SAN FRANCISCO

I arrived in Germany June 2, 1915. After three weeks spent in visiting hospitals and such of my former acquaintances and masters as were not at the front, I succeeded, through letters to the Surgeon General of the XIV Army Corps, in getting an assignment as surgeon to the Reserve Hospital at Ettlingen in Baden. The hospital occupies the buildings of a large new school for noncommissioned officers which were hurriedly completed at the beginning of the war and immediately turned over to the medical department. It contains from 1,020 to 1,100 beds and is well equipped. The local Red Cross, which was under contract to the military authorities to furnish supplies, was exceedingly liberal, equipping a small laboratory with microtome, etc., and granting all instruments and appliances asked for. There was not the slightest deficiency to be felt in any way; even articles that one would imagine to be scant during the blockade, such as absorbent cotton and rubber goods, were not stinted.

On first taking over the service, I found but few cases of surgical interest, the hospital having been used largely for infectious diseases; I had ten days in which to get things into running order for more active surgery, and July 3 we received our first large transport of 244 wounded. They came fresh from the front, some within twenty-four hours after injury.

The impression one gets of war surgery depends largely on one's position and the particular kind of warfare that is being waged at the source of one's material. We got almost all of our wounded from the west front where the troops have been almost entirely under artillery fire since the rapid movements of the first few months of the summer and fall of 1914. Consequently wounds from small arms were rare; most of them were caused by shells and shrapnel.

WOUNDS BY SMALL CALIBER BULLETS

Infantry and artillery fire make quite different kinds of surgery. A man hit by an infantry bullet either falls on the field, or, if brought to the hospital his condition is, as a rule, determined by the importance of the parts injured—he is out of danger or dies quickly. A man struck by a piece of shell is, unless the wound is entirely superficial, a source of anxiety and care for weeks and months to come. It is the accompanying infection or the lack of it that makes the difference.

There are exceptions to these general statements. The modern small caliber bullet by no means always makes a small, smooth wound. The nature of its path is determined partly by the character of the bullet and partly by the parts struck. Whether the bullets are pointed like the English, French and German bullets, or more snubbed like the Russian missiles, does not seem to make much difference as regards the character of the wounds. What does make a difference is whether the points are smooth, or whether they have been notched, dented, hollowed out or otherwise deformed—either by the soldiers themselves, who by nipping the points of their bullets with pliers, or notching them with a knife, can make a dumdum bullet out of regular ammunition, or by more concerted arrangement—for there certainly have been instances in which soldiers were captured with dumdum ammunition that bore the marks of having been machine-made in regular factories. A bullet with a nicked or hollow point no longer pierces; it rends and tears with explosive violence; the resistance at the point is such that the immense force pressing the greater hindermost bulk of the bullet forward causes its rear parts to burst from the casing, scattering the lead at angles to its original path and producing a small wound of entrance with a huge one of exit. Evidence of a dumdum bullet can only be gotten from the unspent bullet itself; the nature of the wounds can lead to a guess, but not to certainty. An ordinary bullet may become deformed by striking a twig or a metal button, or by being deflected by a stone or a wire fence and may act precisely like a dumdum; or it may shatter a bone and hurl the fragments aside and before it, and make havoc as great as any illegal projectile.

The shape of the bullet is again of importance, in so far as those having their center of gravity near the rear tend to turn in their course when the point meets resistance; they tend to turn broadside when they strike, or even ply butt-end foremost, or turn butt-end foremost inside the soft parts, leaving an irregular and destructive track.

Most of the warring powers encase their bullets in a steel or nickel-steel jacket. The French use copper and theirs is perhaps the most humane of the small ammunition. The copper jacket is tough, the bullets are usually little deformed, even when striking bone. One often finds the sharp point bent around like a hook, the bullet still remaining whole. The English bullet is perhaps the worst; the anterior third of its core is of aluminum, the remaining two-thirds of lead; it carries a deep groove toward the rear. It consequently tends to fly asunder at its two weak points, the junction of the aluminum and the lead, and the groove. Its center of gravity lies far back; this makes it prone to take a wavering or deflected course.

The nature of the wound depends not only on the bullet, but on the parts struck; if a bone is shattered with much force, each splinter acts as a projectile in itself and tears its own way through the soft parts. The cases in which a semifluid organ, such as the brain, or a viscus filled with fluid, the bladder or intestines, are struck with explosive effect, are of less interest. The men probably all die on the field.

HEAD INJURIES

Injuries to the skull are of three kinds—tangential, penetrating, and perforating. Most injuries in men arriving at the base hospitals are tangential. Men with penetrating or perforating wounds generally die before they get there. Tangential injuries are generally trephined at the field hospitals; the splinters of the internal lamina that the projectile has driven before it into the brain, and the blood clots, are removed. Although the wounds usually heal kindly, the patients are often permanently incapacitated, from organic or functional brain disturbances—hemiplegias, hemianopsias, deafness, and severe neuroses. Men with such

* Reported with permission of the Medical Department, XIV Army Corps.

perforating wounds who survive often reach base hospitals for final operation. It is wise to examine roentgenoscopically every fractured skull. One often finds surprises—bullets or deep indentations and splintering of the internal lamina where none were suspected. These skull cases should be watched a long time; they often develop late abscesses. These have made me desperate. They are frequently difficult to diagnose. The men may have a constantly normal temperature. Sometimes there are signs of pressure, and the heavy, stupid mentality and the drowsy stare may allow a guess at the condition. Sometimes the pus shows a round shadow in the Roentgen plate. This is of value. When one opens and drains the abscess one's troubles begin. The man may run a smooth and feverless course for weeks, the prolapse through the trephine opening, however, persisting; then comes a sudden high temperature, a progressive softening reaching far down into the ventricle, and death after one had congratulated oneself on having the man past danger. Meningitis has been favorably influenced by repeated lumbar puncture, and many recover under this treatment. Careful revision of the wound at the first operation and careful removal of all foreign bodies and splinters of bone, even at the cost of some additional trauma to the brain, might prevent some late abscesses. But this is more easily said than done. Carefully to revise a mangled and bleeding brain is usually a consummation devoutly desirable, but unattainable. We should do what we can, however; the brain seems to stand more after a fresh trauma than it does at later operations when we traverse inflamed and morbid gray matter.

For defects on the vault of the skull, the osteoplastic closure of Garré with a flap of bone shavings from the outer lamina and periosteum is sufficient. If there is danger of postoperative adhesions between the cortex and the bone, one can turn the flaps over so that the fascial side rests against the brain and the inner periosteal side with the bone-shavings looks outward. This form of closure makes a free transplant of bone unnecessary except where there is a deep defect in the forehead which looks badly unless filled out level with the surface. Here the graft may be taken from the rib in preference to the tibia; the bone of the rib is softer and if one splits it along one edge with a chisel, leaving a periosteal hinge along the other, one can trim it readily to any desired shape with a scissors. If the defect is deep, bits of muscle may be left adhering to the rib, or one may fill out the rest of the hole with fat from the subcutaneous tissue of the chest.

CHEST WOUNDS

Wounds of the chest do not give as little trouble as is popularly supposed. Ritter called attention to this at the Congress of Military Surgeons in Brussels. Shortness of breath and general weakness often last a long time, and the physical signs—lack of respiratory movement, shrunken chest, with several intercostal spaces tender to pressure and retracted, especially on inspiration, dulness, with impaired or wanting breath sounds and weak vocal fremitus — remain unchanged for months, even when aspiration gives no fluid. The hematothorax makes a thick pleura and in shrinking contracts the chest.

Bloody sputum is usually taken as a sure sign of a wounded lung. It is not necessarily so. One sees numerous men whose chest wall has not been perforated, but who have bloody sputum for several days after injury, and who show dulness and impaired breathing over parts of the thorax corresponding to the seat of the wound. If the upper part of the chest wall has been injured, we may find dulness and absent or weak breathing here alone, with the lower chest free, thus ruling out the presence of hemorrhage into the pleural cavity. These are tangential injuries of the chest with contusions of the lung, perhaps merely a local pulmonary congestion due to lack of respiratory movement in tender parts of the thoracic wall.

WOUNDS OF EXTREMITIES, NERVES, VESSELS

Gunshot wounds of the extremities have increased in gravity with the increased power of the modern small arm. *Injuries to the nerves and blood vessels* are more frequent. Nerves and vessels cannot evade the modern bullet. The extent of the injury depends, I think, much on the position of the member when struck. If an elbow is extended with the brachial vessels and the nerves on the stretch it seems reasonable that the bullet itself may make but a small lateral rent, but that the tenseness of the vessels and the sudden jerk of the muscles may complete the tear. If the elbow is bent, the nerves and vessels loose, the damage will not be nearly so great. It is not a question of nerves or vessels evading the bullet, it is a question of their damaging themselves by their own tension under its impact.

The path of the bullet is almost always surrounded by a large, hard and tender infiltrate. Sections show extensive hemorrhage and necrosis of the muscles. What causes the wide necrosis I do not know. The size of the intermuscular and intramuscular clot is often surprising, even where no visible larger vessel has been injured. It may be as big as a fist or the flat of the hand. In a few weeks the clot and the infiltrate shrink to a scar that crunches like bacon rind under the knife, and turns its edge, and in shrinking strangulates the nerves. Palsies begin to appear, particularly radial and peroneal ones, together with agonizing neuralgic pains that are referred to the peripherally innervated parts, the fingers, the hand or the foot. They are severest at night and wear the men out from lack of sleep. One finds atrophied muscles, partial reaction of degeneration, hypesthesias and paresthesias and a locally increased sweat secretion. At operation the nerve is seen to be unsevered, or partly so; the sheath, however, is 2 to 3 mm. thick, red or yellowish-brown, and hard, the scar and infiltrate reaching a hand's breadth or more beyond the path of the bullet. One should not content oneself with dissecting the nerve out of the scar, but should split the thickened sheath and dissect out the separate nerve-tracts according to Stoffel. If this is done thoroughly and carefully (it is not easy) the palsies usually disappear in a few days and the pains cease, these, however, less rapidly than the palsies, I have found.

FRACTURES

Fractures from the small caliber bullet, even where the bone is widely shattered, usually heal promptly, often with an exuberant callus, because of the amount of extravasated blood. I have been struck by several cases that resemble one at the San Francisco City and County Hospital of a burglar who had been shot in the leg and who, besides a comminution, showed a spiral fracture of the tibia that could not have been caused by any form of direct violence. One of these

men had a bullet wound of the thigh with a typical spiral fracture of the upper third, without any splintering of the bone; others had comminuted fractures where the bone had been struck by the projectile, and above this pure spiral fractures; or again, there was a comminution below and the upper fragment of the same break ended in a spiral, this being the most frequent. The twist must have been produced by indirect or muscular violence simultaneously with the shattering of the bone lower down, perhaps by the man's fall.

The question of *how to transport fracture patients* is still unsettled. A well-fitting plaster splint with windows for dressings is the best, but is often impossible. There is no time for applying plaster hip splints when the wounded pour in after a battle, several hundred at a time; often the men at the front are not trained in the application of plaster. We must remember that all sorts of medical men are there doing their best — young and old — dermatologists and ophthalmologists — all sorts of men, many of whom have not handled plaster since their student days. Splints as usually applied are more of a balm to the surgeon's conscience than use to the wounded. The number of suggestions for splints and dressings coming out in the journals every week make it evident that this problem has not yet been successfully solved.

WOUNDS BY ARTILLERY PROJECTILES

So much for wounds from small caliber bullets. I have put them in a class by themselves because they *are* a class by themselves. It is the *wounds from shells and artillery projectiles* that make one realize what war is—make one thank God that our country has been spared such scenes.

A man ought to put up with a great deal before inflicting such tortures on his fellow beings, even though he may not care about his own person. Genghis Khan, Tamerlane, the Malayan potentates, Nero, Eogel's old Cossack Tarass Bulba—whatever stands in our eyes for cruelty—had no such thoughts as these. Gouging out of eyes, the Philippine "water-cure," thumb-screws, the rack, these were matters of hours or a few days at most; but gas phlegmons and tetanus and hospital gangrene by which a man rots away for days and weeks in his own filth, where shattered bones stick out through green and quivering muscles, where pus and gangrene travel up by inches, and not even a kindly stupor comes to a man's aid, these have been reserved for modern humanity to inflict.

Not only small arm ammunition but shells have individual differences in structure. Shells seem to burst in three ways according to the steel used in them. Those used at the beginning of the war broke into large, more or less irregular polyhedral chunks, something like lumps of coal. The pieces were often very large, as large as a fist or larger; one sees them rarely now. Another kind also bursts into lumps, but the lumps are smaller and jagged and often full of little blow-holes, like lumps of coke. These are worse than the first kind in that they carry more dirt with them; rags of clothing, etc., bury themselves in the irregularities of the fragments and are caught and entangled by the sharp projections. The third kind, which are of our manufacture, I think (evidence of kindly good will), do not burst into lumps but into jagged slivers with saw edges, some straight, others curled. The small ones are often shaped like Indian arrowheads or flint knives. This is evidently a tougher kind of steel.

Besides the wounds from shells one finds shrapnel wounds, which occupy a position as regards infection midway between small arm ammunition and the shell, wounds from fragments of bombs and those from accidentally exploding percussion caps. The caps, which usually explode while being handled, cause mangling injuries with much tearing and laceration because of the nearness at which they act.

SHELL WOUNDS ALWAYS INFECTED

Every wound from a shell is infected. This may be taken as a rule without exception. The infection may not be severe and the wounds may occasionally heal without suppuration, just as bits of uniform (surely never sterile) often heal in a wound without suppuration. Generally, however, the infections are severe, and every one who has been here since the beginning of the war says that they are becoming graver and graver as the war goes on. Why, I do not know, except that the uniforms are becoming dirtier and dirtier I suppose, and the ground more and more impregnated with the products of decaying cadavers. Tetanus, which was frequent and severe at the beginning of the war, has practically disappeared since all wounded are given prophylactic injections of serum at the first dressing.

MUST BE TREATED ACTIVELY

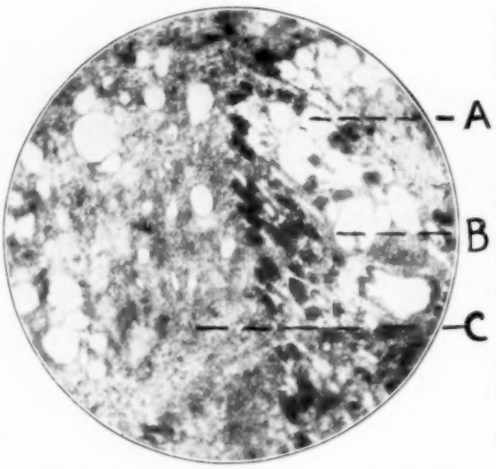
The teachings of von Bergmann—the "Hands off"—so great a blessing for gunshot wounds, have been a bane to the treatment of artillery wounds. "Hands off!" "sterile dressings" and "splints" had been so drilled into students, had become so intuitive, that men forgot that there is a difference in wounds of battle—that a smooth shining bullet and a jagged piece of steel carrying dirt and stones, and bits of uniform and underclothing with it are not the same thing. It is only recently that there has been a general awakening to this fact. The mistake has been that artillery wounds have not been treated actively from the first—opened widely, all the nooks and crannies opened, and the dirt removed. These wounds are the most deceptive, and it was the more difficult to arouse field-surgeons to their importance because gas-phlegmons and gangrene do not begin to show from the first. There are usually two or three days of quiet, the wounds are reactionless and the fever which generally accompanies artillery injuries may disappear for a day or two after the first twelve hours. Then the inflammation breaks loose and the phlegmon runs wild. Men are kept a day or two in a field hospital, their condition does not seem to be precarious and they are transferred to the base, out of sight of the field surgeon by the time the phlegmon has really begun, so that his sins of omission may rarely come to his eyes.

GAS PHLEGMON

Gas phlegmons are of several kinds. They are better termed phlegmons than gangrene; the gangrene is not primary, but secondary. In the one kind the whole limb is immensely swollen and tender, dusky brownish-yellow, hard and tense as an inflated automobile tire, and tympanitic on percussion. The wound edges pout and show a dry muscle underneath, covered, perhaps, with a greenish fibrinous membrane; from the wound comes a little thin exudate with an ammoniacal, urinous smell. When incised the muscles burst from their sheaths like a tire from a casing, they crackle under the knife and one can squeeze gas

bubbles from them with the fingers as from an edematous lung. They are dusky in color, perhaps greenish; from between them, far up and down the limb runs a watery, stinking pus. The veins are engorged or stopped by black blood clots and steeped in the same thin pus. The outer wound, which may be no larger than a half dollar, shows astonishingly little of the awful destruction beneath it. In fresh cases it is usually easy to find and extract the foreign body; it falls into one's fingers without one's particularly looking for it. The gangrene usually comes later and is a consequence, I think, of the extensive venous thrombosis. If all goes well, the next day sees the muscles that were previously tense to bursting, soft and black but still full of gas; and on the day after, they begin to slough. A huge amount of sloughs comes from the wounds — green ones from the muscles and fascia mixed with bright ochre-colored pieces (what these are I do not know) and much foul pus. Once sloughing begins the wounds clean themselves rapidly; in a week or ten days they are usually covered with healthy granulations and the patient is feverless.

The second kind of phlegmon is more superficial and is characterized by a yellow gelatinous edema with which the subcutaneous tissue is soaked, especially around the veins, which are often thrombosed. Here there is a more extensive moist gangrene of the skin, but the deeper parts are less affected. After a day or two thick green pus takes the place of the yellow edema, and if one runs through the skin along the course of the veins with a pair of scissors one can follow the pus half the way, sometimes all the way, up the limb.



Gas phlegmon of the muscle. A, gas bubbles; B, muscle fibers, mostly necrotic; C, blood clot and purulent infiltrate.

Gas phlegmons should be laid wide open, not incised and drained, but *opened*, so that all the affected parts lie bare and there is nowhere to place a drain. This should be done at one operation. It is often good to cut the muscles square across; the ends retract and leave the wound agape. One cannot make multiple small incisions and wait and follow the pus as it appears. It comes too quickly. The limb becomes gangrenous, or the man dies, or both, while we wait. In order to prevent the pus traveling up along the veins it is often well to cut the main subcutaneous ones across considerably above the wound; in a phlegmon of the leg, for instance, to cut and tie the saphena above the knee. In this way one will often find the perivenous edema high above the wound and cut its further course short. The scar blocks future thrombotic or lymphangitic extensions. In the subfascial phlegmons one should make long incisions along all the veins that are surrounded by pus, often half a dozen from the ankle to the knee. They heal kindly as the edema recedes, if strips of sound skin are left between them.

I have not been able to muster courage to do primary amputations and have lost surely one, perhaps two, men by waiting until the limb was evidently gangrenous. When amputating I have merely cut through the soft parts below the site of fracture leaving long flaps of skin and muscle and have not attempted to amputate in healthy tissue. Part of the flaps slough away, but enough usually remains to make a useful covering for the stump. It has not been necessary to amputate for phlegmons limited to the soft parts without fracture. The most virulent phlegmons are those of the lower extremity; those of the arm are as a rule less dangerous. One hears much talk among the men of "poisoned" ammunition; this is evidently a myth; the fact that the leg and the foot are most severely affected while severe phlegmons of the arm are rare, makes it plain that it is the dirt and dirty clothing accompanying the fragment of shell that produce the infection rather than the fragment itself. The coat of course is rarely as dirty as the trousers and drawers.

The after-care of phlegmons is one of the most difficult problems we have to meet. It is impossible to say when the infection is conquered. For months after the wounds are clean the men will suddenly have fever of obscure origin, develop erysipelas or have recurrences of septic inflammation. Any attempt at complicated plastics, any attempt at clean amputations with closure of the wound is followed by high septic fever, is a most risky thing, and is doomed to suppuration and failure, even long after the wounds are clean and the temperatures normal. One is desperate; the wounds must be brought to a close at some time; one does not know when. When reamputating it is best to disturb the granulations as little as possible, to make a simple straight longitudinal incision, cut off a sufficient length of protruding bone, and let the wound close by granulation, bringing the edges together considerably later with adhesive plaster, not with sutures.

In some cases where one does not have to cut or otherwise disturb the granulating wound, the stumps may be covered by simple plastics, sliding down a bridge flap from the same extremity, or taking a pedicled flap from the other leg, or, in the case of the arm, from the chest. Bearing future difficulties in mind, one should try to save flaps long enough to cover the bone at the first operation — flaps long enough to accomplish closure after they have shrunk and are cleanly granulating and can be laid over the stump.

The late recurrences of fever and suppuration that we find occurring spontaneously or after the simplest operative intervention, are due, I think, to streptococci which have accompanied the gas bacillus in all of my cases, and not to the gas bacillus itself. The sepsis is a streptococcic sepsis in its clinical aspects. I have not been able to make blood cultures, but one case that showed thick gram-positive bacilli with central spores August 25, showed after death September 8, streptococci and staphylococci but no gas bacilli in cultures from the wounds, regional lymph glands and spleen.

PROVISION FOR THE CRIPPLED

September 5 the Ettlingen Hospital was converted into a purely orthopedic institution and run in con-

nection with a school for the one-armed, and an institute for the care and training of cripples. As the war goes on the number of orthopedic cases and cripples multiplies. Other wounded are cured or die, orthopedic cases and cripples remain. There are numerous hospitals for their care throughout Germany—models of wisdom and foresight in coping with the economic problems that will come after the war.

When it is apparent that a man is permanently incapacitated, he is transferred to his home hospital in order that he may get in touch with former employers and friends and look about for suitable work while undergoing hospital treatment. Manual training schools with special courses for cripples, and all kinds of educational opportunities are open to him, and wherever possible the endeavor is made, not to find him another occupation, but so to educate him in his former trade and elaborate his former stock of knowledge that he will be able to do with his brains what he previously had to do with his hands. Thus one-armed bricklayers and masons have been taught mechanical drawing and architecture and are earning more money with their one arm as builders and contractors and foremen than they did before the war with their two hands. This, of course, is not given to every man's talents and industry, but every conceivable contrivance and prosthetic appliance and tool are given the crippled so that they may earn a useful livelihood in spite of their disablement. The neurologic-orthopedic hospital in Mannheim, to which Stoffel is surgeon, is a model. While undergoing treatment and in the free intervals between orthopedic exercises, massage, etc., the men attend classes in bookkeeping, stenography, and other commercial studies; in cobbling, locksmithing and all sorts of trades; in bookbinding and other industrial arts.

Much depends on willingness to work; the certainty of a pension is a drawback in this respect, and I think it quite likely that some law may be found necessary after the war to keep cripples from idleness. There is much here that bears on our own compensation laws and that would be worth investigation.

Karlsruhe, Sept. 22, 1915.

Benefits of Applied Physiology.—The gains in human vitality which we can secure from applied physiology will, I believe, prove as surprising as those we are already securing from applied bacteriology. To this end we need to formulate scientifically what constitutes a wholesome life and to educate the people on what changes from existing customs are necessary to live that life. Furthermore, in the industrial world, we must in some cases compel wholesome mental and physical conditions for our working people. The time has come when science must subdue custom and reason triumph over tradition.—Prof. Irving Fisher in *American Journal of Public Health.*

TOTAL REMOVAL OF THE ORBIT UNDER LOCAL ANESTHESIA

HERBERT P. COLE, M.D.
Fellow of the American College of Surgeons
MOBILE, ALA.

Having occasion to perform total removal of the orbit in a nephritic woman 81 years old for a recurring suspected melanotic sarcoma I determined on the use of local anesthesia, feeling that the prognosis did not warrant any serious operative risk. Much to my surprise the literature failed to disclose even a case report of this operation performed under local anesthesia injection, although the literature is replete with local anesthesia methods for tenotomy and operations on the bulbus oculi. There are also frequent references to various methods for deep orbital blocking of the trigeminal nerve.

The remarkable facility with which I performed complete removal under local anesthesia without pain or risk to the patient urges me to present what I believe to be an original technic. I wish also to present my avulsion of the supra-orbital and infra-orbital nerves and the contents of the infra-orbital canal and the supra-orbital notch as an original addition to the usual operation.

Fig. 1.—Removal of orbit for melanotic sarcoma. Note growth on lower lid. Dots mark points of deep nerve blocking. Dotted line marks superficial infiltration. The dot at the outer angle of the orbit is placed about 2 cm. too far outward.

REPORT OF CASE

Feb. 1, 1915: The patient, a white woman, aged 81, referred by Dr. Blewett of Citronelle, Ala., gave a history of having had a slow growing fungas-like tumor removed seventeen months before. It slowly recurred and was again removed in seven months. It reappeared two months ago and appeared as a slightly nodular, darkly pigmented growth bulging under the conjunctival margin of the lower lid. The growth was fixed to the conjunctiva and the skin margin and was approximately 1 cm. in its long diameter and was not attached to the bony orbit nor the bulbus oculi.

An examination of the fundus disclosed no pigmented growth or other abnormality. A tentative diagnosis of melanotic sarcoma prompted a search for metastatic growths, revealing a small patch of verruca senilis on either cheek, a small red papilloma above the right nipple and one near the seventh cervical vertebra. A small area of verruca senilis had been removed from the left cheek five months before. Otherwise there was nothing even slightly suggestive of a malignant growth. Albumin and casts were found in the urine but no melanogen.

Operation.—A preliminary injection of scopolamin $\frac{1}{500}$ grain and morphin $\frac{1}{8}$ grain was given seventy-five minutes before operation, and scopolamin $\frac{1}{500}$ grain and morphin $\frac{1}{6}$ grain hypodermically, thirty minutes before operation. A line of local anesthesia infiltration was made one-half inch below the lower palpebral margin and carried well down on the malar border. The infiltration was then carried within the orbit and close to the orbital floor. This permitted dissection along the orbital floor where I determined the growth was free from the periosteum.

A heavy needle 5 cm. in length was then passed into the deep orbit following the median bony wall well up toward

the orbital apex, the tissues being slowly infiltrated with a 1 per cent. novocain-epinephrin solution along the course of the needle. In this manner the frontal and lacrimal nerves were blocked, with a periosteal infiltration up to the optic foramen, about 5 c.c. of solution being used (after Braun).

Similarly a needle was passed along the lower orbital margin well in toward the foramen rotundum. In this manner

Fig. 2.—Melanotic sarcoma apparently arising in the conjunctiva.

I accomplished a perineural infiltration of the infra-orbital nerve and its branches in the sphenomaxillary fissure, using about 3 c.c. of a 1 per cent. solution (Fig. 1).

The third needle was passed into the orbit a little to the outside of the supra-orbital notch, following the bony wall well up toward the apex and producing a perineural infiltration of the supra-orbital nerve. The superficial line of skin infiltration was then completed with a 0.5 per cent. solution encircling the external orbital margins. The entire orbital contents together with the periosteum were then removed after the usual method.

In addition I employed an original procedure, so far as I am able to ascertain, by avulsing the supra-orbital and infra-orbital nerves and cleaning out the fatty tissue and periosteum from the supra-orbital notch and the infra-orbital canal, thereby removing a possible source of neoplastic recurrence. The entire operation was performed with the patient conscious and without pain or discomfort. She returned to the ward with a pulse of 80.

Postoperative History.—There was no recollection of the operative period. The patient suffered practically no postoperative pain due to the avulsion of the supra-orbital and infra-orbital nerves. An area of anesthesia presented over the distribution of the nerves. She was at once placed on a regular ward diet, was allowed to be up and about and was sent home in five days, healing occurring by granulation.

On Aug. 23, 1915, the patient returned for examination in apparent good health with a clean and healed orbit. There was a melanotic nodule beneath the skin in front of the left ear and a second nodule below the left clavicle. The latter was removed under local anesthesia and on dissection presented the picture of a typical metastatic melanotic sarcoma. The urine at this and for the first time disclosed the presence of melanogen, indicating the probability of hepatic invasion.

Pathologic Report (By John A. Lanford, M.D.).—The specimen consists of the orbital contents together with the entire lower eyelid and the major portion of the upper lid. A slightly nodular pigmented and semisolid growth 1 by 0.5 cm. by 0.5 cm. in diameter lies in the conjunctiva of the lower lid and does not involve the eyeball or other structures. On section it presents a smooth, firm, deeply pigmented surface. Microscopic section discloses a melanotic sarcoma apparently rising from the conjunctiva.

CONCLUSION

The facility with which removal was performed without pain or risk to this patient bearing such an unfavorable prognosis warrants its further application under similar or more favorable circumstances. The early return of metastasis in this case substantiated our selecting a safe operative procedure.

Van Antwerp Building.

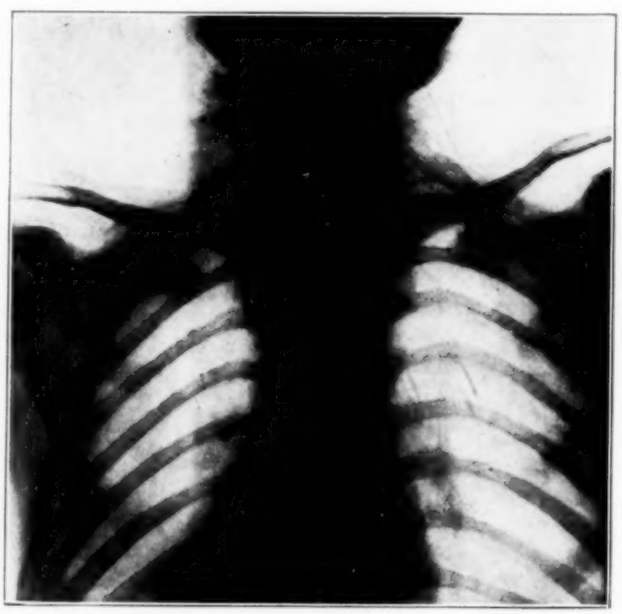
REMOVAL OF HALF-DOLLAR AND QUARTER-DOLLAR FROM ESOPHAGUS OF CHILD

H. B. DECHERD, A.M., M.D., AND W. D. JONES, M.D.
DALLAS, TEXAS

Paul D., white, aged 8 years and 2 months, of Pittsburg, Texas, June 22, 1915, had a half-dollar and a quarter-dollar in his mouth, and "skinned the cat" on a horizontal iron bar. Both coins were suddenly swallowed. His physician gave him salts and castor oil several times during the next few days, as well as olive oil enemas. He vomited quite often for two days; he could swallow no solids—only water, soups and milk, and these not in large quantities. June 28, the boy was brought to us at Dallas, and the coins located as shown in the accompanying roentgenogram. Note that the quarter shows slightly below the half-dollar.

Under anesthesia (ether), and with the fluoroscope over the chest-wall, the coins were easily and quickly removed without the least traumatism. The half-dollar was first removed, it being more easily grasped by the forceps. Both coins were somewhat rusted and caked with food.

Our experience in removing a tack from the left bronchus of a 4-year-old child some months ago, together with this case, demonstrates the great ease of work of this char-



Half-dollar and quarter-dollar in esophagus.

acter when done with the aid of the fluoroscope on the chest-wall. Every minute movement of both forceps and foreign body can be observed with the greatest accuracy, and extraction performed in the same way. Even the tyro has nothing to fear if he has a good Roentgen-ray man to depend on. There were no complications, the child returning to his home next morning after eating a hearty breakfast.

Therapeutics

THE ALCOHOL HABIT

According to the Towns-Lambert treatment, patients who have been taking both morphin and alcohol should be treated for the morphin as previously described, and at the same time the alcohol should be gradually withdrawn. Such patients are likely to have a great deal of stomach disturbance and may not well retain their medication or food. Lambert thinks that sodium citrate in doses of from 5 to 10 grains, every hour, best relieves this condition, with or without from 10 to 20 grains of cerium oxalate or 5 grains of Tully's powder [compound powder of morphin], every two hours, for one or two doses.

Sodium citrate should be given in solution. Cerium oxalate is a drug that cannot compare in value with bismuth subcarbonate. The compound powder of morphin treatment, of course, should not be used in patients who have both the alcohol and morphin habit.

Lambert describes in detail the treatment of the alcohol habit about as follows: The belladonna mixture described under morphinism and the five compound cathartic pills and 5 grains of blue mass are given together at the first dose; then the belladonna mixture is continued every hour, day and night. Twelve hours after the initial dose of drugs, the patient is again given from three to five compound cathartic pills, and twenty-four hours after the initial dose he is again given the cathartics, followed by salines if necessary; and again the cathartics and salines are given at the thirty-sixth hour. Some hours after the last dose the bilious stool should appear. Sometimes, Lambert says, it is necessary to carry on the treatment over one or two more cathartic periods with compound cathartic pills and blue mass, at intervals of forty-eight hours.

Elderly or nervous patients, especially if they have been on a long debauch, "are tapered off with 2 ounces of whisky for four or five doses through the first twenty-four hours." Also, if these patients are excessively nervous and cannot sleep, a mixture of "chloral hydrate 20 grains, morphin one-eighth grain, tincture hyoscyamus one-half dram, tincture of ginger 10 minims, tincture capsicum 5 minims, and water one-half ounce," which he thinks is "the best hypnotic for them." After the twenty-four hours, or sooner, if the circulation requires it, these patients should receive strychnin and digitalis.

If the patient has the cocain and alcohol habit combined, as in the treatment of the cocain habit alone, no cocain is given at all, but strychnin must be given from the beginning.

This seems like pretty serious medication. Although the value of free catharsis is recognized, some less complicated cathartic drugs and preparations will doubtless act as well. In weak and elderly patients, as emphasized by Lambert, support of the heart will be urgently needed, and in patients who have not the combined morphin and alcohol habit, but only the alcohol habit, morphin is often good treatment to quiet excessive cerebral excitation. It is much better to combine the morphin hypodermic treatment with a hypodermic dose of ergot. The ergot should be given intramuscularly, best into the deltoid muscle, an hour before the morphin is administered. The ergot will strengthen the heart, raise the blood pressure, act as a mild sedative to the central nervous system, and accentuate the quieting effect and the soporific effect of the morphin that is given an hour following. Hence the dose of morphin need not be so large as it otherwise must be, as any individual with cerebral excitation may be irritated and not quieted by a small dose of morphin.

As stated by Lambert, many of these alcoholic patients have gastritis, and any such combination as the hypnotic mixture above described is likely to be immediately vomited. The use of ginger and capsicum is the old method of causing an irritation of the stomach not unlike that of clear whisky. These spices have been given for years to prevent the stomach craving for its usual alcohol dose. Therefore there is nothing new in this part of the treatment. The small dose of tincture of hyoscyamus can play a very small part in the quieting action of the hypnotic mixture described. If atropin is advisable, or scopolamin is needed, it had much better be given hypodermically to get the desired effect.

Chloral hydrate is a most valuable hypnotic, and, if the heart is not too weak and the stomach will retain it, it should be the hypnotic of choice. But it is urged that it should not be combined in the same prescription with the ingredients suggested. The absorption of the dose of morphin may be greatly delayed when so combined. Very active drugs, in serious conditions such as the prostration from the treatment of chronic alcoholism or of delirium tremens, should be given hypodermically, as they not only may be vomited, but they may not be absorbed and may remain in the stomach for hours.

It would seem that the Sceleth treatment of morphinism, modified to fit the alcoholic patient, would be much simpler than the Towns-Lambert treatment. The cathartic treatment is not so severe, and the drugs used are much more simple, and the prostration cannot be so great.

DELIRIUM TREMENS

This condition so frequently occurs, and the symptoms and treatment are so well understood, that it is only necessary to refer to some of the newer discoveries in regard to conditions present in this alcoholic condition of the brain.

Hirsch[1] finds a profound disturbance of the suprarenal glands in those dying from alcoholic poisoning. Kaiserling and Orgler, in 1902, were the first to note the presence of liquid crystals or droplets in the cortex of the human suprarenal glands. Hirsch says that nearly all investigators agree that these doubly refractive droplets are esters of cholesterol or lipoids. Somewhat similarly refractile globules have been found in the liver when there is fat or cloudy swelling, and in diseased softened parts of the central nervous system in certain conditions.

Hirsch states that Dr. E. R. Le Count of Chicago has constantly found alterations in the cortex of the suprarenals in individuals dying of delirium tremens. The most important changes are the diminution of the yellow color of the cortex and the presence of doubly refractive droplets. It has also been chemically determined that the cholesterol content of the suprarenals is diminished in delirium tremens. In fact, it may also be stated from these postmortem findings that if these changes are not found in the suprarenals, the patient died of some other cause than

1. Hirsch, E. F.: A Morphologic and Chemical Study of the Double Refractive Fats of the Adrenals in Delirium Tremens, THE JOURNAL A. M. A., Dec. 19, 1914, p. 2186.

delirium tremens, and Hirsch found that in chronic alcoholics without delirium tremens these refractive lipoid droplets were not increased in number, but were even diminished, showing that the suprarenals were subjected to some other kind of toxin. Acute toxic processes have been shown to diminish the refractive bodies of the suprarenals.

Hirsch quotes Landau as stating that the suprarenals "are not concerned with lipoid formation, but rather the adrenal cortex contains an increased lipoid content under different conditions which have in common only a retention of the lipoids, or are characterized by an abnormally increased lipoid formation, the opposite holding true in conditions accompanied by a lipoid-poor cortex."

It would seem that when the heart is weak and the blood pressure low, as it generally is in delirium tremens, whatever other treatment was used, epinephrin would be of value.

This disturbance of these suprarenal glands may account for the development of the "between toxin" mentioned by Steinebach.[2]

Steinebach has found that when the pupils in delirium tremens do not react to light, the pressure of the cerebrospinal fluid has been increased, as shown by spinal puncture; and after some of the fluid in the cerebrospinal canal has been allowed to drain away, the patient may drop to sleep without any drug. Steinebach has used lumbar puncture in eighteen cases of delirium tremens, and his results have confirmed his belief that abnormally high cerebrospinal pressure is responsible for some of the symptoms of delirium tremens. Although alcohol has been found in the cerebrospinal fluid in alcoholic poisoning cases, Steinebach thinks that it is not the alcohol that irritates the meninges to cause an increased secretion of fluid, but that probably the alcohol generates a sort of toxin (which he terms "between toxin"), which can cause an increased production of cerebrospinal fluid. He therefore thinks that spinal puncture not only will relieve pressure, but also will remove some of this irritant toxin and aid in saving the patient.

Though alcoholic cerebral edema is probably due to a toxin acting on the vessels of the meninges, we must not forget that serous meningitis due to an infection may occur in an alcoholic patient.

Alcoholic wet brain is discussed by Sceleth and Beifeld.[3] These observers see annually about 2,500 cases of alcoholism; consequently, their ability to give important data concerning delirium tremens is unquestioned. They state that the longer the history of alcoholism, the more frequent will be the attacks of delirium tremens, and the more likely is the patient to develop wet brain, and the greater the number of attacks, the more likely does cerebral edema follow the delirium. It never precedes it. In other words, alcoholic wet brain is a late symptom of delirium tremens and part of the toxic effect of alcoholic poisoning. They also find that a long period of overuse of alcohol must precede the condition of real delirium tremens, namely, from seven to ten years, which may be termed the "incubation period." It has long been recognized that chronic alcoholic patients have so long maltreated their stomachs, intestines and livers, to say nothing of their kidneys, that they are unable properly to destroy toxins, perhaps quite largely from the injury done the "Pasteur filter" of our bodies, namely, the liver.

Added to the disturbed metabolism caused by sclerosis, or chronic inflammation, of the glands is the inability of the organism to care properly for waste products, to detoxicate them, so to speak. Also the delirium tremens patient so frequently has gastritis, with vomiting, during his attack, that starvation adds its element to the production of an acidosis, and acidosis plays quite an active part in his serious condition, and may cause his death.

Sceleth and Beifeld find that an acute infection like pneumonia, and a serious injury like the fracture of a bone, and even a mental shock, is very frequently the predisposing cause of delirium tremens.

Delirium tremens may occur in several degrees of intensity. There may be the simple "touch of the horrors," which means the patient is much nervously excited, disturbed by the least noise, and may have hallucinations, more or less, of sight and hearing, as well as sleeplessness. He is also pretty sure to have tremor. These investigators find the incipient period of a severe attack to be about two or three days, during which period proper treatment and good sleep may forestall the actual development of the condition of delirium tremens. As is well known, delirium tremens may be accompanied by subnormal temperature, cold skin and general prostration; or, in a strong individual not seriously diseased, there may be some fever, flushed face, and increased blood pressure, with a strongly acting heart. It is obvious that these two types of delirium tremens require very different treatment. The first type must be supported; the second type may be depleted. Both, Sceleth and Beifeld find, require strychnin in place of their alcohol.

The average length of time that delirium lasts is about five days. It may terminate sooner; it quite frequently lasts longer. These observers find that the comatose or wet brain symptoms will occur in from 10 to 15 per cent. of the cases. If cerebral edema is to occur, the patient's delirium becomes of the low, muttering type; he may have a slight rise in temperature, and the pulse becomes more rapid and weak; the tongue becomes coated, the breath foul, the teeth covered with sordes; and albumin often appears in the urine. In other words, the cerebral irritation has become one of cerebral pressure. With this pressure Sceleth and Beifeld say that vomiting does not occur. Kernig's sign is always more or less present, and when there is much rigidity of the muscles, especially of the back of the neck, the prognosis is bad. The deep reflexes are at first increased during the cerebral irritation period, and later, with wet brain symptoms, are first sluggish and then may be absent. "The pupils are usually small, equal, regular, responding sluggishly to light; they dilate somewhat if the patient can be aroused, narrowing down once more as he relapses into coma."

Contrary to the observations of Dana and of Steinebach just quoted, Sceleth and Beifeld do not find the cerebrospinal fluid under much pressure. In an uncomplicated case of alcoholic wet brain there is no special abnormality in the cerebrospinal fluid.

In numerous necropsies performed by Dr. E. R. Le Count on patients who have died of delirium tremens, he has not found signs that the fluid in the

2. Steinebach, R.: Deutsch. med. Wchnschr., 1915, xli, No. 13; abstr., THE JOURNAL A. M. A., May 8, 1915, p. 1620.
3. Sceleth, C. E., and Beifeld, A. F.: Am. Jour. Med. Sc., 1915, cxlix, 881.

meninges and ventricles of the brain was under increased pressure before death.

In making a diagnosis of a patient who is brought to the hospital comatose, Sceleth and Beifeld urge that trauma should not always be looked on too seriously. The history of an injury may cause the alcoholic condition to be overlooked. On the other hand, a fracture at the base of the skull, when no serious external injuries are in evidence, may be diagnosed by bleeding from the ears or nostrils; by finding cerebrospinal fluid exuding from these regions; by slowly developing ecchymoses over the mastoids or about the eyes; by paralysis of the muscles of one or more extremities, and by spinal puncture showing blood in the cerebrospinal fluid.

An acute meningitis with sudden coma may be diagnosed by the appearance of the fluid in cerebrospinal puncture, and by its bacteriologic examination. Uremic coma is difficult to separate from the wet brain of alcoholism. In uremia, convulsions are likely to occur, and there may be exaggerated knee jerks, while the deep reflexes are generally absent in coma of wet brain. Apoplexy, cerebral embolism, and cerebral thrombosis generally give localized paretic symptoms.

The wet brain of alcoholism lasts, on an average, about three weeks, and there may be symptoms of this condition for many more weeks; but the mortality, according to Sceleth and Beifeld, is nearly 75 per cent. Death is generally hastened in these cases by a coincident, or later developing, bronchial pneumonia. Cardiac failure, and denutrition from inability of the patient to take nourishment, are serious factors in the downward tendency of alcoholic wet brain.

In the treatment of this condition, every effort should be made to get some nourishing liquid into the patient, even if it is necessary to pass a nasal tube or give rectal feeding, though such methods are not very satisfactory. The bowels should be moved as often as seems advisable. Cardiac tonics are certainly in order. Sceleth and Beifeld have not found spinal puncture of value, contrary to the findings of Dana and Steinebach, quoted above. While they find that ergot is of value in the sthenic type of delirium tremens, they have found it harmful in alcoholic wet brain. This malaction of ergot is difficult to understand; provided that indications for ergot are present, namely, if the blood pressure is low and the heart not too weak, and with more or less paralysis of the intestines, with possibly distention with gas, and with low fever it would seem that ergot would be indicated. If the heart is so weak as not to withstand the increased peripheral resistance caused by ergot, and if the blood pressure is not low, ergot would not be indicated. Ergot, to be of value in such conditions, must be given intramuscularly, and not too frequently.

Neurasthenia and the War.—A fact of importance which we may mention is that neurasthenia and other neurotic conditions are apparently becoming much less common, in spite of the anxiety and strain resulting from the war. This is not difficult to understand, as the experience of most people who have been accustomed to the treatment of nervous conditions indicates that it is not so much the great tragedies of life which are apt to upset the equilibrium of the nervous system but small daily worries persisting for long periods of time, and above all lack of occupation and interest in life.—Dr. W. H. B. Aikens, address before Toronto Academy of Medicine.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

EURESOL (See N. N. R., 1915, p. 208).—The following dosage form has been accepted:

Euresol pro Capillis.—Euresol perfumed to render it suitable for scalp lotions. Manufactured by Knoll and Co., Ludwigshafen a. Rh., Germany, and New York (Merck and Co., New York).

POLLEN EXTRACT.—Pollen Vaccine.—A solution of pollen protein.

Actions and Uses.—Pollen extract is employed for the relief or prophylaxis of a common type of hay fever or pollinosis. Pollen extract prepared from the pollen of one plant (for instance, ragweed) is not primarily intended for use in cases due to pollen from other plants, as grasses and goldenrod, though persons subject to autumn catarrh frequently react to the pollen of more than one species. The patient's susceptibility may be tested by rubbing a small quantity of the pollen vaccine into a scratch of the skin; if the patient is sensitive to that particular pollen, an urticarial wheal results. To avoid systemic disturbance, it is recommended that no therapeutic injections be made until the reaction from this cutaneous test has subsided completely. Treatment with pollen extract has seemed to give a varying degree of relief in a number of cases. In some cases the psychic element seems to play a part, and in such instances it is difficult to determine to what degree the good results are due to suggestion. The immunity from symptoms conferred by treatment is apparently not permanent, and in most cases does not last longer than a year.

Dosage.—It is regarded as important that the individual dosage should be determined by testing each patient's susceptibility, as sensitiveness varies greatly and an overdose may cause disagreeable and alarming symptoms or possibly even death. A method used for such test is to make a series of scratches on the patient's skin (it is important that these should be made at some distance from the scratches of the first test) and to apply to these scratches 25 per cent., 10 per cent., 1 per cent. or even weaker dilutions of the vaccine. From 5 to 10 drops of the dilution which fails to produce a definite skin reaction may be injected subcutaneously as the first dose. Injections, increasing by a few drops at first, and later by the use of a stronger dilution, may then be given at intervals of a few days or a week.

H. K. Mulford Company, Philadelphia.

Hay Fever Vaccine, Mulford (Autumnal).—Prepared by extracting the proteins from the pollen of ragweed (*Ambrosia artemisiaefolia*) and standardizing the solution by estimating the amount of protein contained in it. Preserved with trikresol. Marketed in packages of four syringes containing, respectively, 0.0025 mg., 0.005 mg., 0.01 mg. and 0.02 mg. of pollen protein; also in separate syringe packages containing 0.02 mg. of pollen protein.

The pollen, after being dried, is ground in a ball mill to destroy the cell membrane. It is then extracted with physiologic salt solution. This extract is precipitated with acetone; the precipitate is dried and finally extracted again with physiologic salt solution. The soluble proteins being brought into solution, a nitrogen determination is made of this extract, and it is then standardized according to (nitrogen) protein content.

MERCURIC SUCCINIMIDE (See N. N. R., 1915, p. 201).—The following non-proprietary preparation has been accepted:

Mercury Succinimide, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

MORPHINE MECONATE (See N. N. R., 1915, p. 209).—The following non-proprietary preparation has been accepted:

Morphine Meconate, Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

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SATURDAY, DECEMBER 4, 1915

THE PRICE OF QUININ

We in this country are inclined to feel that the scarcity of certain drugs is a local hardship. As a matter of fact, as indicated in articles abstracted recently,[1] the war has produced a stringency in the drug market everywhere. Among the drugs now expensive and difficult to obtain is quinin, the exportation of which from Germany has been forbidden for several months, and on which an embargo was lately imposed by Great Britain. When the British embargo was declared no German, Dutch or Javanese quinin salts had been obtainable on the New York market for some time. American manufacturers were reported to have withdrawn from the market and to be holding their dwindling stocks and inadequate output to fill previous contracts. Such contracts were being filled at 50 cents an ounce for hundred-ounce tins; but consumers obliged to purchase on the open market, at last accounts, were paying middlemen from $1.25 to $1.50 an ounce for quinin sulphate, while a little earlier prices of $2.10 and $2.25 were quoted.

Only once or twice since the Civil War (when $6.50 an ounce was paid in some instances—in depreciated currency to be sure) have these prices been equaled or exceeded. Between 1880 and 1884 there was a period of high prices, which stimulated an attempt to corner the supply of cinchona bark.[2] The breaking of this corner and the consequent dumping on the market of accumulated supplies, the increased cultivation of the plant and the increased alkaloid content of the bark produced by cultivation are held responsible in varying degree for the subsequent downward tendency of prices. Ten years ago the price quoted by domestic manufacturers was 24 cents an ounce in hundred-ounce tins. From 1910 to 1912, inclusive, it was 19 cents, but in January, 1913, and January, 1914, it was 25 and 30 cents, respectively.[3]

It is perhaps worth while to glance at the world situation with respect to quinin, in an effort to discover if any other factors beside the war are helping to produce the present high prices. Many of the market conditions are obscure, but the following appear to be the leading facts: Cinchona bark is produced in Java, India and Ceylon; only a comparatively small amount still comes from South America, and some is grown in Africa, Jamaica and a few other countries.[4] According to Kraemer,[5] about 80 per cent. of the bark of commerce is produced in Java. One of the leading countries in the manufacture of quinin is Germany, and other manufacturing countries include France, Great Britain, Holland, Italy, the United States, Java and India.[6] Not all of these countries manufacture quinin in an amount sufficiently exceeding domestic needs to affect the foreign market. Thus, India, a large producer of cinchona, is said to use virtually her whole crop of bark, and also to require some Javanese bark for the domestic manufacture of quinin, which alkaloid is all or practically all consumed within the country.[7] The world's market depends for cinchona bark chiefly on Java, and for quinin mainly on Germany.[6] The United States is Germany's largest customer, besides being the heaviest consumer of quinin among all the countries of the world.[8] The effect of any disturbance in the world's supply of quinin would therefore be felt most acutely here. The war, of course, has affected the supply by causing an increased demand for quinin for the use of the armies, by interfering with the free movement in commerce of the bark and the manufactured alkaloid and salts, and in other ways, both direct and indirect.

Certain other elements, however, enter into the situation, and some of these antedate the war. The shipments of bark from Java had been gradually rising, until in 1910 they reached a total of nearly 8,000,000 kg.[8] In July, 1913, it is understood that the planters formed an agreement to maintain prices by restricting the output. This agreement (to which European manufacturers are believed to be parties) has since been maintained with modifications necessitated by the war; and the downward trend of exports is indicated by the fact that the total shipments of bark from Java to Europe for the first nine months this year reached only 3,776,810 kg., as against 5,531,500 and 6,686,450 kg. for the same periods of 1914 and 1913, respectively.[9] The price quotations from American and British quinin manufacturers given above showed a rising tendency even before the time of this agreement. A fire which damaged a por-

1. Miscellany, THE JOURNAL A. M. A., Nov. 20, 1915, p. 1840.
2. National Standard Dispensatory, 1909, Article Cinchona, p. 447.
3. A table of prices for quinin sulphate from 1890 to 1915 (Chem. and Drug.) shows a similar movement of prices in Great Britain, namely, from 1 shilling 5 pence to 1 shilling, 1890 to 1905; 8½ pence 1909 to 1911, inclusive, and 9½ pence, 1 shilling and 1 shilling 3½ pence for 1912, 1913 and 1914, respectively.
4. King's American Dispensatory, 1905, Article Cinchona, p. 538.
5. Kraemer, Henry: Scientific and Applied Pharmacognosy, 1915, p. 738.
6. Information supplied by the Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce.
7. Roeder, George: Tropenpflanzen, 1909, xiii, 473, quoted in Digest of Comments on the Pharmacopeia.
8. Tunman, O.: Ap.-Ztg., 1910, p. 565; also information from the Bureau of Foreign and Domestic Commerce.
9. Oil, Paint and Drug Reporter, Oct. 25, 1915, p. 45.

tion of the Javanese bark fields early this year probably did not affect the situation seriously.[10] A somewhat significant straw in the wind, possibly, is the report that the quinin factory at Bandoeng, Java, has declared a dividend of 28.5 per cent. for last year, as against 17.5 per cent. for the previous year.[9]

While some of the factors in the situation were operative previously, it would seem that the recent abrupt rise in the price of quinin is due chiefly to causes connected with the war. The present extremely high prices, therefore, may be temporary. Moreover, there is said to be a probability of increased output from the Amsterdam factories.[11]

RECTAL FEEDING REINVESTIGATED

The limitations of rectal feeding as a mode of introducing true nutriment into the organism, in the sense of furnishing calories of protein, fat and carbohydrate, have frequently been pointed out in THE JOURNAL. The practice of injecting nutrient enemas into the lower bowel has largely been given up, at least in the manner in which the procedure was carried out a generation ago. Nevertheless there are practitioners who continue to assume that a poorly digested mixture of milk and other partly soluble food products can experience some absorption and utilization from the colonic regions into which they are introduced, especially if the administration is slow, as is necessitated by the drop method of introduction employed by Murphy for saline solution.

The essential difficulty in the conventional plan of rectal feeding lies in the fact that practically all foodstuffs need to be digested very completely before they can be utilized from the alimentary tract. The lower bowel contains no satisfactory ferment equipment for accomplishing the essential digestive changes. Therefore, unless special and specific precautions are taken to furnish all of the nutrients in a completely digested form they are, theoretically at least, of little avail for rectal alimentation. In practice it is almost impossible, or at any rate impracticable, to obtain any of various foodstuffs, with the possible exception of sugar, in a suitable condition of digestion. Water and salts are, of course, readily absorbed from an enema; and because of the relief to a patient who has been unable to retain ingesta of any sort administered by way of the mouth, an apparent benefit is ascribed to the nutrients dissolved in the introduced fluid. The disappearance of water from the latter does not assure the absorption of the food therein as well.

How futile the rectal feeding of peptonized milk may be, even when it can be continued for days without discomfort (which is rarely the case), has been shown in actual metabolism experiments by Adler[12] of the University of Maryland. In order to ascertain the extent of absorption of food administered by this method, the colonic intakes of nitrogen for from four to six days were compared with the output in the urine and the return loss by rectum. Patients with gastric and duodenal ulcers, but without abnormality of nutrition, were employed as subjects. The largest amount of nitrogen that Adler was able to supply daily by rectal feeding was 3.9 gm., of which 2 gm. were returned with the stools. In no case was there a disappearance of more than 50 per cent. of the protein supplied; in some cases the apparent absorption was as low as 30 per cent. The average amount of nitrogen absorbed in these cases was 1.14 gm. per day, equivalent to 7.1 gm. of protein.

From a practical standpoint and in consideration of the usual duration of such attempts at rectal feeding of protein, the results are practically negligible. Adler remarks that when the amount of nitrogen actually lost by the individuals is compared with the amount that it is possible for them to absorb by colonic feeding, one must realize how little is accomplished. It should be noted, however, that the human organism can experience very considerable losses of protein without permanent damage. Starvation experiences extending over several weeks testify to this. It would seem more rational, therefore, if rectal feeding is to be attempted at all, to concentrate the effort on that type of foodstuff which is most likely to be absorbed and promptly utilized. Glucose belongs in this category.

THE SOURCE OF ENDOGENOUS URIC ACID

The successive changes in the conceptions held by scientific men regarding the sources and formation of the uric acid excreted in the urine are indicative of a steady progress in our knowledge. Not long ago, uric acid was still looked on as an intermediate stage in the metabolism of simple proteins—a step in their transformation to urea. Modern knowledge of the chemistry of the purins turned a new light on the problem, and indicated the direct chemical relationship between nucleoproteins and their derivative purins on the one hand, and uric acid on the other. The leukocyte hypothesis of Horbaczewski, postulating a direct relationship between the disintegrating nucleated colorless blood corpuscles and uric acid production, likewise had its vogue, until it was clearly demonstrated that leukocytosis and uric acid elimination are by no means necessary concomitants.

Some years ago Burian furnished a helpful suggestion by pointing out that the excreted uric acid of man appears to have a twofold source. One, the exogenous, is clearly related to the food supply, and is directly referable to the purin-yielding substances or free purins present in the diet. Uric acid is the metabolic end-product of these compounds. The uri-

10. Oil, Paint and Drug Reporter, Feb. 1, 1915, p. 43.
11. Chem. and Drug., Nov. 6, 1915, p. 49.
12. Adler, Harry: Value of Rectal Feeding, Am. Jour. Med. Sc., 1915, cl, 562.

nary output of uric acid can, as is now generally appreciated, be markedly increased or diminished by the expedient of augmenting or decreasing the supply of purins in the ingesta. The other, or endogenous, source of uric acid has not been so clearly ascertained. It represents the origin of that small yet ever present fraction of the usual output which is realized even in the absence of all purin-yielding foods from the ration. Evidently its origin is to be sought in tissue sources.

Hypotheses regarding the endogenous uric acid have not been wanting. Its formation has been attributed to actual synthesis from simpler compounds. It has been looked on as the end-result of the metabolism of the cellular nucleoproteins, representing the wear and tear of the nuclear materials of the organism. This has, in fact, been a widely taught view, particularly at a period when the endogenous output of uric acid was believed to be a constant quantity for the individual.

According to a view offered some time ago by Mares, the activity of the digestive glands is peculiarly concerned in the production of that fraction of the uric acid output not accounted for by ingested purins. This theory, that endogenous uric acid may arise from glandular activity, has received some substantiation from recent experiments by Mendel and Stehle[1] at Yale University. These show that materials free from uric acid precursors are not necessarily entirely devoid of influence on the uric acid output. Conditions which tend to stimulate the alimentary secretory glands seem to augment the hourly output of uric acid while the provocative influences last. Proteins, for example, which induce a more copious flow of digestive secretions than do fats or carbohydrates, tend to promote a larger output of endogenous uric acid than do latter foodstuffs in the course of their digestion. Beside the effect of these food stimuli in bringing about an increased elimination of uric acid, a comparable one is produced by the administration of pilocarpin, which is known to stimulate the digestive glands. Atropin, which inhibits secretory activity, was found to suppress the uric acid output normally noted to follow the ingestion of certain foods. The passage of indigestible, bulky agar-agar through the digestive tract did not cause the effect which would be expected if the mere work of the intestinal musculature were a significant factor in endogenous uric acid production.

If this view, supported by Mendel and Stehle, that a portion at least, of the endogenous uric acid may originate from the activity of the alimentary secretory apparatus proves tenable, several hitherto obscure facts can be explained. It becomes evident why the output is lowered notably in starvation, when the alimentary tract is not functioning. The often noted apparent constancy of the endogenous uric output (on purin-free dietaries) is then merely the expression of an unforeseen uniformity in the degree to which the digestive processes are involved by the diets in question. On the other hand, a varying endogenous output no longer offers an unsolvable puzzle.

1. Mendel, L. B., and Stehle, R. L.: The Rôle of the Digestive Glands in the Excretion of Uric Acid, Jour. Biol. Chem., 1915, xxii, 215.

THE TRAGEDY OF UNPREPAREDNESS IN MEDICINE

A recent number of a periodical published in the interest of osteopaths contains a number of references to the death of a boy from diphtheria. A death from any cause and even one from diphtheria would not usually have caused so much comment, but this boy happened to be the son of the editor, who is an osteopath. The reports show that the disease was not recognized until a physician—a graduate of a Class C medical college—was called in, and he thought lobelia was better than antitoxin. The editor is now mourning the death of his son, regrets that antitoxin was not used, and has started a campaign among osteopaths urging the use of antitoxin in diphtheria. Pathetic as are the statements of this heart-broken father, they show unquestionably how slight was his knowledge of the simplest fundamentals of medicine. They show also that the admission to practice of any one who is tied down to a theory, a cult or a fad, who has not previously been trained in the underlying medical sciences, is a menace to the public. Some of the editor's statements follow (the words in brackets and the italics are ours):

> Billie had diphtheria four days before we knew what he had. . . . I had *never seen a case of diphtheria before; never even thought of looking at his throat.* . . . Dr. ——— was called the fourth day and diagnosed the trouble at once. He is an M.D.; has had wide experience; has had the training so many of us have not had.

Here is, indeed, a frank acknowledgment. In another paragraph he says:

> For many years I have been interested in diphtheria; have tried to figure out what I could do if my boys ever got it. Talked with ——— [named two osteopaths] and many others *in re* antitoxin. They usually *didn't believe in it.* I suggested using it on Billie when Dr. ——— [the M.D. referred to in the foregoing paragraph] was sure it was diphtheria. He thought lobelia best.

Unfortunately, the "graduates" of some low-grade medical colleges are deplorably lacking in their medical training. The editor continues:

> I don't understand antitoxin; I can't understand how a poison can cure disease or neutralize poisons. Yet when the death rate is cut from 50 per cent. to 10 per cent., isn't it best to be a physician first, an osteopath second?

And in another paragraph:

> Billie depended on his father. I in a way failed him. While I lived up to the best light I had, still *my osteopath's training obscured my sense of fairness;* I think now I made a mistake. I did not give him the best care that his generation afforded.

This periodical also prints an editorial reproduced from another osteopathic periodical which is likewise advocating the use of antitoxin in diphtheria. Extracts from this editorial show that other osteopaths are likewise seriously ignorant of the simplest facts of bacteriology, of infectious diseases and of the methods of preventing their spread. For example:

> Much ignorance regarding and much unreasoning opposition toward the administration of antitoxin for diphtheria still exist in our profession.

Again:

> Some who criticize antitoxin have never treated a case of diphtheria. Others have never seen [possibly never recognized] a case. Some admit freely they would refuse to treat diphtheria *if "they knew what they were getting into."* They explain that they "do not cater to that kind of practice." They "do not like contagious diseases."

Another osteopath is quoted as saying:

> How many of us ever saw a case of diphtheria during our student days? Even if we used antitoxin how many of us would know how to use it? Personally, I believe in it but I regret to say, *I doubt if I would know a case of diphtheria if I saw it;* was not trained to know it. . . . Two days ago I talked to a 1915 graduate who has never seen a case of measles, scarlet fever, diphtheria, erysipelas, typhoid fever, or a single obstetrical case. He knew all about mumps as he had them himself during his senior year.

The paragraphs quoted show the fallacy of the belief, which appears to be prevalent in some states, that an individual may be safely permitted to practice a single branch of medicine, or make use of a single method of treatment, without first undergoing a complete course of instruction in the fundamentals of medicine. If the editor of the paper quoted, before specializing in osteopathic methods, had obtained a complete medical training, it would have enabled him not only to recognize diphtheria in its earlier stages and possibly prevent the death of his son, but also to understand why antitoxin has reduced the death rate in diphtheria "from 50 per cent. to 10 per cent." An important question — as far as the public is concerned — is: How many other children have lost their lives in his practice and in that of the thousands of others who have assumed the rôle of physicians, but who are unable to "know a case of diphtheria if they saw it" or who cannot "understand" or do not "believe in" antitoxin? And diphtheria is only one of the many diseases, contagious or otherwise, which for their most favorable treatment require a positive and early diagnosis. While urging other osteopaths to make use of antitoxin in diphtheria, therefore, this editor at the same time might well urge that all practitioners of osteopathy and other cults enter some good medical school and complete their medical education so they may give their patients the benefit of the researches of Pasteur, Koch, Klebs, Flexner and others, which have done so much to reduce the death rate from contagious diseases and saved untold thousands of lives by the prevention of epidemics. If the death of this small boy will lead to such a reform, he will not have died in vain.

THE STATES RELATIONS SERVICE

The interdependence of medicine and a large number of the natural sciences is being recognized more forcibly today than it was a few years ago. To cite a single illustration, it is not long since entomology was regarded as something quite foreign to the practice of medicine; but the growing recognition of the very important rôle of insects in the transmission of disease has created a demand for detailed information of the life habits of various species, such as the mosquito, the fly, the body louse and the flea. Instances of this sort could easily be multiplied. It is in harmony with these modern mutual relationships in science that the work of the U. S. Department of Agriculture has frequently been of immediate interest to the medical world. Indeed, this is true to an extent which the casual observer might not easily suspect; for various activities of the department, such as those related to the enforcement of the Food and Drugs Act, to the investigations of the Bureau of Chemistry, and other branches of this service have no peculiarly logical connection with agriculture more than with other aspects of governmental management.

Under the plans adopted by the last Congress for the reorganization of the federal Department of Agriculture, the States Relations Service was formally established by Secretary Houston, and began its activities July 1, 1915. This new organization developed on the foundation of the Office of Experiment Stations, which it will include. Of further interest from a medical point of view is the establishment of the Office of Home Economics, which will include investigations relative to foods, clothing, and household equipment and management.

The Office of Experiment Stations, which remains an integral part of the new and larger organization, was organized in 1888 under the directorship of the late Prof. W. O. Atwater. In 1894 the state experiment stations were specifically authorized by Congress to include the study of the food of man in their inquiries and report their progress to the department. At this time an appropriation of $10,000 was made for investigation, under the direction of the Office of Experiment Stations, of "the nutritive value of the various articles and commodities used for human food." Subsequent to this came the numerous contributions of technical and popular data which have done so much to extend knowledge of the science of nutrition in the United States. Some of the work, notably that involving the development of the respiration calorimeter and the measurements of the metabolism of matter and energy in the human body, has become fundamental in the science of physiology. The extensive compilations of the composition of food products—analytic records which are used everywhere for purposes of instruction and research—as well as the popular expositions of the uses of foods, and their

composition and preparation for the home, have interested thousands. A total of 132 nutrition publications have been issued, of which sixty-two are technical bulletins. The publications as a whole, including the often misnamed "Farmers' Bulletins," have been much in demand, the total distribution amounting to millions of copies. Now the scope of the work is to be increased to include studies of agricultural products in their relation to clothing and other uses in the home. Anything which seems likely to lead to some progress in the long neglected field of the hygiene of clothing will surely be welcomed by the medical profession.

From an initial staff of three persons, the number of employees has grown, in the Office of Experiment Stations, to more than 250; the fund for its maintenance rose from $10,000 in 1888 to $1,930,780 in 1915. We shall expect continued efficiency from the new States Relations Service.

Current Comment

STATISTICS OF HEALTHY DIPHTHERIA CARRIERS

Two years ago the United States Public Health Service conducted an investigation at Detroit with the purpose of ascertaining the distribution of diphtheria carriers. The determination of the percentage of carriers was made shortly after a time of greatly increased prevalence of diphtheria. The conditions under which the study, which has just been reported,[1] was carried out differ from most previous investigations along similar lines in that it was not confined to groups in institutions or selected portions of the community. It represented rather the incidence of diphtheria carriers determined by cultures taken indiscriminately from healthy persons of all classes. Out of about 4,000 healthy persons, thirty-eight, or nearly 1 per cent., were found to harbor the *Bacillus diphtheriae* as revealed by cultures made from the throat, from the nose, or both. Out of nineteen cultures isolated from nineteen carriers, two were found to be virulent, suggesting a possible 0.097 per cent. of the individuals examined as carriers of virulent bacilli. Twenty-nine of thirty cultures of *Bacillus diphtheriae* from clinical cases were virulent, and all thirty were acid producers. Comparison of the value of different types of single cultures for the detection of carriers shows that the throat culture gives the lowest, and the combined nose and throat the highest results. The latter, however, is but slightly higher than that from the nose alone. The combined results of a throat and of a nose culture give markedly better findings than those of any single culture. These results are believed to be a fair index of the proportion of carriers among the population. Based on the total number of inhabitants, it means that in a city of half a million persons there are about 5,000 carriers of diphtheria bacilli. The bacteriologists of the Public Health Service point out that the Detroit statistics are low compared with those obtained by the majority of workers in this field. According to the literature cited, results above 2 per cent. are found more often than results below this figure. The data cited for a group of persons examined at the time of the epidemic of diphtheria at the Johns Hopkins Medical School and Hospital[2] in 1911 indicated forty-five carriers among 1,290 persons, or 3.48 per cent. All reliable facts of this sort are of great value in the prosecution of epidemiologic studies in the interests of the public health.

1. Goldberger, Joseph; Williams, C. L., and Hachtel, F. W.: Report of an Investigation of Diphtheria Carriers, Bull. 101, Hyg. Lab., U. S. P. H. S., 1915, p. 29.

2. Ford, W. W.: The Recent Epidemic of Diphtheria in Johns Hopkins Hospital and Medical School: General Procedures Adopted, Bull. Johns Hopkins Hosp., 1911, p. 357. Moss, W. L.: Diphtheria Bacillus Carriers, Tr. XV Internat. Cong. Hyg. and Demography, 1913, iv, Part 1, p. 156.

BACK-FIRING

To many who have read the much over-written case of the Chicago infant who recently came into and went out of this world with certain deformities, the question doubtless occurred: What would the followers of Mrs. Eddy do in such a case? Logically the followers of this cult would have done just what happens to have been done by the physician in charge: Nothing. And the result, of course, would have been the same. Possibly because this line of thought is rather obvious, the *Christian Science Monitor* devotes over a column to the case. Under the sonorous title *"Ave Medicus Imperator,"* this journalistic champion of Mrs. Eddy's doctrines belabors the medical profession, charging that "the place of Caesar as a dispenser of life and death is to be taken by the modern physician," and, further, that "the hospital is to usurp the position of the arena." The article, of course, is wholly in the nature of a back-fire. The poor human mite, whose short but tragic life and equally tragic death have proved such a boon to the sensational newspapers and such a grief to the thoughtful, really "passed over" strictly according to the tenets of Mrs. Eddy's disciples. We assume, naturally, that even the most rabid of that sect would hardly claim that thought-waves, either long or short range, would remedy a congenital deformity. The baby died because "treatment" was "absent."

MISTAKEN ECONOMY AND THE TREAMENT OF THE CHRONIC INSANE

One hindrance to the adoption of improved methods in the care of the insane not infrequently is a mistaken idea of economy in the governing bodies of institutions. An average layman's idea of the economic principle underlying the care of the chronic insane probably is (at least, unless he has a personal interest in some member of this unfortunate class) that, within limits of decency, the less spent the better. Of course, for sheer humanity's sake, the insane must have food, clothing and adequate housing accommodations; they must be restrained from doing violence to themselves or to others, must receive necessary personal attention and must not be subjected to abuse. But, since the hopelessly insane are a total loss to themselves and to society, why spend money in any further attempt to

improve their condition? Such, it is not unfair to surmise, is the unformulated feeling which puts obstacles in the way of individualized work with deteriorated patients. Dr. E. A. Foley, in the last issue of the *Institution Quarterly*, reports the results of experiments which indicate that, quite apart from the humanitarian aspect, such work is worth while from the purely economic point of view. Two of the apparently most hopeless patients in the Jacksonville (Ill.) State Hospital were selected for experiment. Both had records of destructiveness, filthiness and most violent impulses; both had been expensive patients on account of the amount of clothing, bedding, furniture, etc., which they destroyed, and both were deteriorating. The patients were placed in charge of an especially patient and tactful attendant. At first hydrotherapy was employed; then the patients' interest was aroused by means of games and light work. Destructiveness and filthiness diminished; the patients became less vulgar and abusive; they became friendly to physicians and nurses. Of course, cures are out of the question, but the contentment and well-being of the patients have been vastly enhanced. From the financial point of view, there is a double gain. Not only are the patients now no longer destroying property: they are to some degree producers. So far as this experiment goes, such work appears to be of value from all points of view.

STREET DIRT, UNPROTECTED FOOD AND DISEASE

Prof. C. H. La Wall, chemist of the Pennsylvania dairy and food commission, is said to have found the following assortment of objects and substances in raisins exposed for sale on a Philadelphia street: pieces of prunes; beans and rice; strands of human hair and cat fur; cotton and wool fiber; straw and bits of bran; insect wings and legs; cigar and cigaret ashes, and a yellowed cigaret paper. While it does not appear that any of these unappetizing accessories were exactly proved to be carriers of contagion, the findings strongly suggest the possibilities of infection from food sold from uncovered pushcarts and stands.

The Potash Problem.—The scarcity of potash, which is used both in medicine and in manufacturing and agricultural processes, on account of the European war, bids fair to be abolished. According to *Commerce Reports*, several new methods of increasing the supply of American potash have been devised. One of these is a Canadian method for obtaining potash from ordinary feldspar. This consists in heating the feldspar with limestone and iron oxid at a temperature of about 2,200 F., producing a partly fused mass that is easily decomposed by a weak acid. From this product the potash salts can readily be extracted for further purification. It is said that 106 tons of potash are wasted daily by the twenty-five or more distilleries in this country that subject molasses to a process of fermentation. A New Orleans company has planned to install the process of saving the potash from distillery waste which was recently brought to attention by the United States Bureau of Foreign and Domestic Commerce. Experiments to extract potash from seaweed both in this country and in the Philippine Islands have been noted heretofore. It is stated that seaweed yields about 15 per cent. of potash.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DISTRICT OF COLUMBIA

History of Surgery.—An interesting exhibit of books and pictures illustrating the history of surgery has been prepared by Dr. Arnold C. Klebs at the invitation of Lieut.-Col. Champe C. McCulloch, Jr., M. C., U. S. Army, librarian of the surgeon-general's office, and may now be seen in the Library Hall of the Army Medical Museum.

Eulogize General Sternberg.—At a meeting of the directors of the Washington Association for the Prevention of Tuberculosis, November 6, resolutions were drafted paying tribute to the unselfish character of General George M. Sternberg, late president of the association, to his valuable contributions to preventive medicine and to his personal philanthropic work.

Personal.—Dr. Philip Newton, who went to Russia in charge of a Red Cross unit, is said to have been appointed surgeon of the sixth army corps with the rank of general. ——Drs. Arthur M. Zinkhan and Paul H. Zinkhan, Washington, have returned after a years' service in the war zone.—— Dr. William C. Rives, Washington, has been elected president of the Citizen's Relief Association.——Dr. Thomas W. Jackson, Washington, who succeeded Dr. Richard P. Strong as head of the American Sanitary Commission in Serbia, has returned from abroad.

Honor Magruder.—The Medical Society of the District of Columbia held a meeting November 10 as a memorial to Dr. Ernest P. Magruder, formerly superintendent of the Emergency Hospital, Washington, who died from typhus fever in Serbia, April 9. The work done by Dr. Magruder in combating typhus was described by Dr. Ethan F. Butler, late director of Serbian Unit No. 2, of the American Red Cross, and tributes to Dr. Magruder were also paid by Major Robert U. Patterson, M. C., U. S. Army, medical director of the American Red Cross, and by Dr. George M. Kober, dean of Georgetown University.

ILLINOIS

Matteson School Closed.—The public school of Matteson was closed November 20 and ordered fumigated on account of diphtheria among the pupils.

New Hospital for Highland Park.—At a recent meeting of the board of commissioners of Highland Park a committee was appointed to take up the matter of a local hospital and to report at the next meeting.

Personal.—Dr. Marion C. Dale, McLeansboro, is reported to be seriously ill as the result of a cerebral hemorrhage. ——Drs. Grant Houston, Herbert S. Worthley, James A. Clyne and Philip Le Sage have been elected members of the medical staff of St. Joseph's Hospital, Joliet.

Hospital Addition Dedicated.—On November 17, the chapel and addition to St. Mary's Hospital, Streator, were dedicated by Father Shaunion, vicar general of the diocese of Peoria. After the dedicatory exercises the Sisters of St. Mary tendered a banquet to the physicians of Streator and its environs, over which Dr. Eley E. Perisho presided as toastmaster. The new addition, consisting of four floors and a basement, increases the capacity of the hospital to 125 patients.

Correction.—A statement was published in THE JOURNAL of November 6 regarding a scarlet fever epidemic in Decatur that the spread of the disease was due to a lack of cooperation on the part of local physicians. Dr. Herbert L. Wright, health officer, writes that this statement is incorrect and that he has observed no lack of cooperation, but that on the contrary, he has been requested by eight or ten local physicians to see suspicious cases with them and that their cooperation has been all that could be desired.

Chicago

Health Crusade Proclamation.—Mayor Thompson, on November 26, issued a proclamation designating December 10 as Children's Health Crusade Day.

Diphtheria.—A medical student living in Hitchcock Hall, University of Chicago, became ill with diphtheria November 24, after having been engaged in studying diphtheria germs.

The head of the department of bacteriology is making an investigation to ascertain whether there is any carrier among the students.

Personal.—Dr. Philip S. Chancellor, who went to Europe last May as medical director of the Chicago unit, sails from France on his return on December 25.——Dr. Arthur Dean Bevan, on November 27, was elected president of the Clinical Surgical Society at its meeting in Washington.——Dr. Gottlieb A. Lurie has reached France on his return home from Serbia.

First Aid Classes.—A first aid class is being held on Wednesday afternoons at the residence of Mrs. E. R. Cox, 1529 Astor Street, in charge of Dr. Charles Adams.——Mrs. Arthur A. Small has organized a class of women to become trained nurses and later to affiliate with the National Red Cross of America. The first meeting of the class took place at St. Joseph's Hospital, November 29.

Millions Needed for Health.—Health Commissioner Robertson estimates that his department should have $4,907,561 to spend in 1916. Of this little more than one-half is to be devoted to health, sanitation and hospital work and the remainder to the disposal of city wastes. For the entire department the appropriation for 1915 was $1,507,444 and for next year his estimate has been reduced to $1,356,461.

INDIANA

Schools Closed on Account of Disease.—The schools of Amboy, Miami County, have been closed on account of diphtheria.——The schools at North Grove, which had been closed on account of scarlet fever, have been reopened.

Personal.—Dr. George W. Willeford, Washington, started November 20 on an extensive trip through the west.——Dr. Henry C. Davisson, Hartford City, is reported to be seriously ill at his home.——Dr. and Mrs. Emanuel P. Masgana, Vincennes, have returned to France where Dr. Masgana will take service with the French Red Cross.

IOWA

Personal.—Dr. Fred W. Sallander, Fort Madison, has returned after two months in England.——Dr. Albertus J. Burge, formerly a member of the faculty of the University of Iowa, Iowa City, has been appointed surgeon to the new Catholic Hospital, Mason City, and will soon move to that place.——Fire at Hawleyville, November 8, destroyed the office of Dr. Jesse D. Elliott.

Smallpox.—At Fort Madison, November 18, it was reported that the smallpox epidemic was practically under control, there being about twenty cases in the city. City Health Officer Joseph M. Casey declared that the rapid spread of the disease was due to the lack of vaccination and the reporting of cases when they first appeared. A census of the public and parochial schools of the city showed approximately 1,200 children who had never been vaccinated.

Tuberculosis Notes.—The Free Dispensary for Tuberculosis Patients, established by the Visiting Nurses' Association, at 410 Century Building, Des Moines, was opened November 18. The clinic days will be Thursday and Saturday of each week and the association offers free examination and medical advice to those financially unable to pay.——The Iowa Association for the Prevention of Tuberculosis has recently been organized and on the organization committee are the following physicians: Drs. Murdoch Bannister, Ottumwa; Frank M. Fuller, Keokuk; John E. Luckey, Vinton; John H. Peck, Des Moines, and Herbert V. Scarborough, Oakdale.

KANSAS

Epidemic Diseases.—On account of the prevalence of diphtheria the Ingalls School, Kansas City, has been closed.——The prevalence of diphtheria has caused the closing of the public school at Dunkirk.——The schools of Little River are under rigid quarantine on account of the presence of several cases of diphtheria and scarlet fever.

Personal.—The Kansas Supreme Court has decided that Dr. Chilton W. McLaughlin, health commissioner of Kansas City, is entitled legally to his office under the civil service law and cannot be ousted because of a mistake made by the civil service commission.——Dr. Owen G. Hutchinson has been appointed city physician of Wichita, vice Dr. Leon Matassarin, removed.

Medical Department of State Library.—The state library at Topeka has nearly 1,300 volumes in its medical department and under the terms of the Stormont Endowment Fund several hundred dollars a year are spent for new medical books and under the Sheldon Endowment Fund, $100 a year for the same purpose. The library also receives about twenty medical magazines a month but the librarian states that there is no record of a physician having utilized this division of the library.

KENTUCKY

Eye, Ear, Nose and Throat Clinic Opened.—The Scott County Health and Welfare Association announces the opening of a clinic for the treatment of the eye, ear, nose and throat, to be in charge of Dr. Edward C. Barlow, Georgetown.

Babies in Pediatric Service.—Following a precedent established by the University of Minnesota, the University of Louisville has included in its pediatric service all newborn babies. As soon as the cord is cut the baby is transferred to the pediatric service.

Health Officer Closes School.—The development of six cases of diphtheria among the children attending the George Rogers Clark School, Crescent Hill, Louisville, caused Dr. W. Ed. Grant, Louisville, city health officer, to direct the closing of a portable structure which is used by a class of about forty of the younger pupils of the school.

Personal.—Dr. Arthur T. McCormack, Bowling Green, has been appointed a member of the Kentucky Conference of Charities and Corrections.——The office of Dr. Alvis P. Ryan, Albany, was destroyed by fire November 6, with a loss of $1,000.——Dr. Frederick P. Strother, Madisonville, has been elected vice president of the Hopkins County Public Health League.

Warning.—The board of the Jefferson County Tuberculosis Hospital has issued a warning to the public that imposters are soliciting funds for the Waverly Hills Sanatorium. These men have not yet been identified, but are salesmen of soap and toilet articles who claim that part of the receipts from the sale of their wares accure to the Waverly Hlils Sanatorium.

MASSACHUSETTS

Diphtheria Closes Schools.—The Lynhurst Primary and Grammer School, North Saugus, was closed from November 12 to November 28, because of an epidemic of diphtheria in that district.——The ninth grade of the Maple Street School, Danvers, was closed on advice of the board of health, November 18, on account of the prevalence of diphtheria.

Gives Hospital to Town.—Mr. and Mrs. Richard T. Crane, Jr., Chicago, have notified the Ipswich Society of their intention to give the town a hospital to be known as the Benjamin Stickney Cable Hospital in memory of their friend who was killed recently in an automobile accident. The building is to be of fire-proof construction and will have accommodation for eighteen patients.

Strong Lectures on Typhus.—Dr. Richard P. Strong, professor of tropical medicine at Harvard Medical School, made his first public lecture, November 20, on his experiences as head of the International Committee to combat typhus fever in Serbia.——On December 6, Drs. Charles A. Porter and Robert B. Osgood discussed the work of the physicians and nurses in their party during the past summer.

Personal.—Dr. William Hall Coon, Haverhill, state medical inspector for the northeastern health district, has resigned to assume new duties as medical officer with the Fisk Rubber Company at Springfield and Chicopee. Dr. Lyman A. Jones, North Adams, health officer of the Berkshire District, has been transferred to Haverhill to succeed Dr. Coon.——Dr. Mary T. V. Moore has been appointed a member of the staff of school physicians of Boston.

Value of Bacterial Vaccine in Typhoid Fever.—The Evans Memorial for Clinical Research, Boston, is desirous of communicating with as many physicians as possible who have used bacterial vaccine in the treatment of typhoid fever, that they may collect statistics regarding the efficiency or non-efficiency of this method as a therapeutic measure. Dr. Frank C. Richardson, clinical director, requests that any physician who has treated with the method will communicate with Dr. William H. Watters, 80 E. Concord Street, Boston, when blank forms will be sent that uniform reports may be made.

NEVADA

Personal.—Dr. Sidney K. Morrison, Reno, has resigned as physician of Washoe County.——Drs. Martin A. Robison and Henry Bergstein, both of Reno, have resigned from the City Board of Health.

Scarlet Fever.—November 9, a meeting of the mayors of Reno, Sparks and some other towns with the county com-

missioners and state and local boards of health was held to consider measures to prevent the spread of scarlet fever which was epidemic in the state. There had been some laxness in reporting cases to the local authorities and physicians were warned that such reports must be made in accordance with the quarantine laws of the state.

NEW YORK

A New Step in the Care and Cure of Insanity.—The State Hospital Commission announces that it has decided to establish additional mental dispensaries in connection with the state hospitals for the insane and will employ additional field agents.

Another Death from Anthrax Reported.—A death from anthrax has been reported from Endicott, the correctness of the diagnosis having been confirmed by the city bacteriologist of Binghamton. It is believed that the victim became infected in the Endicott tannery where he was employed.

Resolutions Regarding Dr. Trudeau.—The medical staff and patients of the Workmen's Circle Sanatorium, Liberty, have adopted resolutions regretting the death of Dr. Edward Livingston Trudeau, who had for thirty-one years worked untiringly and unselfishly in the interest of the consumptive workingmen and women, and expressing their appreciation of his work by conferring on the hospital building of the Workmen's Circle Sanatorium, the name "Trudeau."

New York City

Personal.—Dr. Cecile L. Greil was one of the survivors of the *Ancona*, sunk by a submarine in the Mediterranean. ——Dr. Luvia M. Willard, Jamaica, is the first woman to be appointed a member of the staff of the Jamaica Hospital. ——Dr. Edgar L. Gilcreest has returned from service with the American Red Cross in Europe.

Medical Society of the County of New York Elects.—At its one hundred and tenth annual meeting the Medical Society of the County of New York elected the following officers: president, Dr. Frederick E. Sondern; first vice president, Dr. J. Benton Squier, Jr.; second vice president, Dr. Charles H. Peck; secretary, Dr. John Van Doren Young; assistant secretary, Dr. Daniel S. Dougherty; treasurer, Dr. Charles H. Richardson; censors for two years, Drs. Howard C. Taylor, Willy Meyer and Floyd M. Crandall.

Plan for Great Medical Center Receives Setback.—Announcements have been made from time to time with regard to the project of consolidating the College of Physicians and Surgeons of Columbia University and the Presbyterian Hospital and some months ago an option was secured on the American League Baseball Grounds, a tract of land comprising 10½ acres, with the understanding that the university would contribute $1,000,000 when the time came to take up the option. The Presbyterian Hospital was to contribute a like amount. Columbia University has been unable to secure the amount of money required so that the purchase of this particular site will have to abandoned, but it is understood that the plan for consolidation has not been abandoned but has only received a setback.

PENNSYLVANIA

Society Donates Sterilizer.—The members of the Elwood City Medical Society have presented the Elwood City Hospital with a sterilizer for use in the operating room.

Rabies Patient Bites.—Under date of November 26 it was reported from Pittsburgh that a rabies patient who escaped from the Allegany General Hospital had bitten fourteen persons. Eleven of the victims were said to have been sent to the Mercy Hospital to undergo the Pasteur treatment. Among those bitten were Hospital Superintendent Herbert Beamer and four staff physicians. The patient was captured and returned to the hospital, where he died.

Philadelphia

Personal.—Dr. Edward H. Bedrossian has been appointed assistant medical inspector and Dr. Charles M. Strotz, assistant hospital physician at the Hospital for Contagious Diseases, and Dr. Frederick C. Chirinos, outdoor physician in the Bureau of Charities.

Correction Uplift.—The director of the Department of Public Safety has appointed an advisory board whose especial functions shall be the improvement of the housing and medical service in hospitals and other municipal institutions for the care of public charges. The staff includes: Drs. Ella B. Everitt, J. Leslie Davis, Charles H. Frazier, Elijah H. Siter, Thomas H. Fenton, T. H. Weisenburg, Horace Phillips, and James M. Anders.

Questionable Nurse Directories Here. Another Warning.—Physicians of Philadelphia and environs are again being circularized by so-called nurse directories. Ethical private homes or directories for registered and "experienced" nurses are known by their absence of preposterous claims but quite the contrary is true of the unscrupulous variety, those managed "for profit only" if not worse. The safe plan for practitioners is to rigidly avoid these trick concerns, and unless sure of the private nurse homes, to depend only on nurses from a recognized hospital or the Nurse Directory of the College of Physicians. The latter supplies "years of experience" attendants as well as registered trained nurses.

Hospital Contract Awarded.—The contract for the erection of New Misericordia Hospital, at 53d and Cedar Avenue, was awarded November 17. The building will be of the Italian Renaissance style of architecture and of fireproof construction. The main building will stand in the center of a big plot; will be 45 feet wide and 179 feet long. From the ends of the building will extend wings so arranged as to make every room an outside one, with plenty of air and sunlight. To the rear of the hospital will be a building to house the employees of the hospital and the mechanical plant. To the east will be the nurses' home and to the west the convent for the sisters. The second and third floors will be occupied by rooms and suites for private patients.

Aid for Drug Victims.—Acting under the suggestion of Francis Fisher Kane, United States District Attorney, a committee has been formed of well-known citizens of Philadelphia, headed by Edward W. Bok and C. H. Ludington, to employ and direct a skilled social worker to investigate and aid habitual users of narcotics, more especially those addicted to heroin, morphin and cocain. More than $1,000 has already been raised to be used in working out this drug problem. The committee is anxious to obtain at least $3,000 to defray the expense of the first year's work. It hopes to raise this sum before the United States District Court convenes on December 6, when more than eighty drug cases will be called for the court's consideration. Many of these persons are habitual users. The committee will not confine itself to cases referred to it by the Federal courts, but will take up recommendations made by the State courts and the various societies and agencies throughout the city, in an effort to effect a reform in any case that is deserving. The duty of the agent will be to investigate the facts, and when the case is not hopeless, follow up the individual, obtaining the necessary medical assistance and later, if needed, an opportunity of obtaining employment.

WISCONSIN

Dispensary Association Formed.—The Milwaukee Dispensary and Hospital Association, with a capital stock of $10,000, was incorporated, November 6, by Frederick Westwood, B. F. Muehecke and Eugene Shapf.

Sanatorium for Marathon County.—The county board of Marathon County decided by a vote of 44 to 19, November 10, to appropriate the sum of $35,000 for the construction and equipment of a county sanatorium for tuberculosis.

Inquiry Into Industrial Conditions.—Through the agency of the Wisconsin Industrial Commission, Surgeon-General Rupert Blue has assigned Surgeon Joseph W. Scherescheswky and P. A. Surg. Robert Olesen, U. S. P. H. S., to the Wisconsin field and they began their work in Milwaukee, November 15.

Sanatorium Dedicated.—At the dedication of Muirdale, the new Tuberculosis Sanatorium for Milwaukee County, November 19, Dr. Hoyt E. Dearholt, Milwaukee, presided, and addresses were made by Drs. Theodore B. Sachs, Chicago, and Louis F. Jermain, Milwaukee, president of the Wisconsin State Medical Society.

Personal.—Dr. Arthur J. Patek, Milwaukee, underwent an operation for appendicitis, November 12.——The state board of control announces that it has asked for the resignation of Dr. Norman F. Hoffman, superintendent of the State Tuberculosis Sanatorium, Wales.——Dr. Frank S. Wiley has been elected chief of staff of St. Agnes' Hospital, Fond du Lac. ——Dr. John D. McRae, Chippewa Falls, has been appointed physician for the Paint Creek Dam.

Antitoxin and Vaccines.—The health officer at Milwaukee is endeavoring to get through the city council an ordinance requiring the reporting to the health department of all sales of antitoxins and vaccines, and that the name of the person on whom the antitoxin or vaccine is to be used must be in the hands of the department within twenty-four hours. The object is to secure a more complete record of infectious dis-

eases. A fine is provided in the proposed ordinance for failure to make proper reports.

CANADA

Tuberculosis Diminishes in Ontario.—The reduction in the death rate from tuberculosis in Ontario continues, it having dropped to 85 persons per 100,000 of population. Eleven years ago the rate was 148 persons per 100,000.

Syphilis Spreads.—Dr. Charles K. Clarke, superintendent of the Toronto General Hospital, estimates from his weekly mental clinic that syphilis is spreading in Ontario. Heretofor general paralysis has been rare among children in Ontario, but it is now increasing. Dr. Clarke states he deals with thirty cases of mental defectives and imbeciles on the average each week at his clinic and that conditions are getting so serious that radical measures will soon have to be taken in that province.

Antityphoid Inoculation.—At the outbreak of the war the Board of Health of Ontario offered to supply free of charge to the Canadian government all the antityphoid vaccine required for Canadian troops, as well as for those sent from Newfoundland. This offer was accepted. All the vaccine has been manufactured in the laboratory of the Ontario Board of Health in Toronto. Excellent results have been achieved in the prevention of typhoid fever in the Canadian troops.

Diphtheria Antitoxin.—Prior to May, 1914, diphtheria antitoxin was not manufactured in Canada. The cost of this product, including other serums annually imported into Canada, was $120,000. In May, 1914, an arrangement was made with the University of Toronto whereby antitoxin is supplied to druggists and boards of health at a very much reduced cost. The cost of the product previously often prevented large doses. For example, in the year 1913 the death rate from diphtheria in Toronto, apart from the cases in the Isolation Hospital, was 16 per cent.; but where the dosage was large and prompt, 6 per cent. Nearly all the provinces of the Dominion now avail themselves of the product of the Ontario Board of Health.

Low Death Rate in War Hospitals.—Last month the Canadian hospital at Le Touquet, France, was removed to Outreau, near Boulogne, and Col. Adam T. Shillington, Ottawa, was given a week's absence in London. Colonel Shillington visited the new Ontario hospital being erected at Orpington, which will probably be opened in January. During the eleven months Colonel Shillington has been in command of the hospital at Le Touquet, more than 8,000 patients have been handled, only about 500 of whom were Canadians. The total deaths which occurred at that hospital in the eleven months have only been forty-four. Colonel Shillington estimates that the death rate in the field has been about 20 per cent. of those hit, and that the wounds of a large proportion of the soldiers are not of a serious nature. He says that the medical branch of the Canadian army has done splendid work. They have never been short of any supplies and no branch is doing its work better than the medical branch. He has been very much impressed with the way the women turned out to work in France.

Personal.—Dr. Kenneth D. Panton, Vancouver, B. C., who went to France with the first Canadian contingent, has been placed in charge of an ambulance section and given the rank of lieutenant-colonel.——Nothing has lately been heard in Ottawa of the Hon. Dr. Henri S. Beland, St. Joseph, Que., ex-postmaster-general in the Laurier government. It is known that he is a prisoner in Germany, but recent inquiries, both through the British War Office and at Washington, have failed to elicit any information.——Col. Adam T. Shillington, Ottawa, formerly commanding No. 2 Stationary Hospital at Le Touquet, France, has been appointed assistant director of medical services at the Canadian camp in England. Major Henry C. S. Elliott, Cobourg, Ont., has been transferred from No. 2 Stationary to No. 2 Canadian General Hospital. ——Col. Herbert S. Birkett, Montreal, officer commanding McGill University Base Hospital in France, has cabled to Montreal stating that the hospital is to be moved to another situation, but its destination was not mentioned.—— Dr. Edmund P. Lewis, who has been acting as assistant superintendent of the Toronto General Hospital during the absence of Dr. Alfred K. Haywood at the front, has resigned his position to qualify for overseas service.

GENERAL

National Examination Day.—Wednesday, December 8, has been named by the various antituberculosis associations and also by the Life Extension Institute, as National Medical Examination Day, on which it is suggested that everyone undergo a physical examination with special reference to tuberculosis.

Red Cross Seal for Next Year.—As a means of stimulating originality of designs for the Red Cross Christmas seals for 1916, the American Red Cross has decided to conduct a competitive contest and to offer prizes taken from the expense fund set aside for the antituberculosis campaign. Five prizes will be given valued at $100, $50, $25, $15 and $10, respectively. Further particulars and specifications may be obtained by communicating with the American Red Cross, Washington, D. C. All designs submitted must be in the hands of the Red Cross not later than Feb. 1, 1916.

Interstate Society Organized.—The Montana-North Dakota Medical Society whose membership is composed of physicians of northwestern North Dakota and northeastern Montana, was organized at a meeting held in Williston, November 20, and the following officers were elected: president, Dr. Melverton E. Trainor, Stanley, N. D.; vice president, Dr. Edward J. Hagen, Williston, N. D.; secretary, Dr. Frank W. MacManus, Williston, N. D.; and directors, Drs. Loyd B. Dochterman, Williston, N. D., and James H. Drake, Mondak, Mont., and Dr. Frank O. Brigham, Stanley, N. D.

Deaths Abroad.—Henry Charlton Bastian, M.R.C.S., England, 1860; F.R.C.P., London, 1870; aged 78; a well-known English neurologist and biologist; a champion of the theory that life is a form of energy capable of spontaneous growth and author of several works advocating this theory; professor of pathologic anatomy and principles and practice of medicine and professor emeritus in University College, London; censor of the Royal College of Physicians and consulting physician to the National Hospital for the Paralysed and Epileptic, London; died at his home in Fairfield, Chesham Bois, Buckinghamshire, England, November 17.

States Guard School Sanitation.—Forty of the states of the union have taken legal action toward safeguarding the sanitation of public school buildings. In thirty-eight states there are legal requirements regarding the school site; in nineteen states the laws prohibit the location of the school building within a specified distance of houses where liquor is sold, or other disreputable resorts or factories; thirty states have taken up the regulation of the water supply of public schools and in thirty-six states some form of protection against fire and panic has been provided.

Tri-State Physicians Meet.—The thirty-second annual meeting of the Tri-State Medical Association of Mississippi, Arkansas and Tennessee was held in Memphis, November 16 to 18, under the presidency of Dr. William P. Hicks, Earl, Ark., and the following officers were elected: president, Dr. Arthur G. Hudson, Raines, Tenn.; vice presidents, Drs. Samuel D. Robinson, Clarksdale, Miss.; Robert E. Bradsher, Marmaduke, Ark., and John W. Morris, Somerville, Tenn.; secretary, Dr. James L. Andrews, Memphis (reelected), and treasurer, Dr. James A. Vaughan, Memphis (reelected).

Railway Surgeons Meetings.—The twenty-first annual convention of the Big Four Railway Surgeons' Association was held in Indianapolis, November 18, and the following officers were elected: president, Dr. Clayton W. Russell, Springfield, Ohio; vice presidents, Drs. S. H. Nelson, Cleveland; John T. Montgomery, Charleston, Ill.; and Austin S. McKitrick, Kenton, Ohio; and secretary-treasurer, Dr. Leonard A. Ensminger, Indianapolis.——At the fourth annual meeting of the Surgical Association of the Chicago and Alton Railroad Company held in Bloomington, Ill., November 19, Dr. William E. Guthrie, Bloomington, was elected president; Dr. H. Parrish, Vandalia, Ill., vice president; and Dr. Miles B. Titterington, St. Louis, secretary.

Personal.—Surgeon-General Rupert Blue, U. S. P. H. S., after a visit to the meeting of the Southern Medical Association at Dallas, inspected the quarantine station at New Orleans.——Asst. Surg. Gen. Henry R. Carter, U. S. P. H. S., who recently went to Porto Rico to investigate a fever supposed to be yellow fever, has been seriously ill with dengue but is now reported to be out of danger.——Dr. Ferdinand Shoemaker, assistant medical supervisor of the United States Indian Service, Washington, is making an inspection tour to isolated colonies of Indians who are in charge of L. D. Creel, special agent in Utah. The reason for this inspection is the recent appearance of trachoma among the Indians.

Impostor Swindling Physicians.—Physicians throughout the country have been victimized recently by an individual under various aliases. Complaints have come from Dr. Burnett W. Wright and Dr. Arthur McCormack of Bowling Green, Ky.,

that their names have been falsely used. The individual was confined in the county jail at Bowling Green on the charge of forgery. It is stated that since his release he has been making skilful pleas to physicians, securing money from them under false pretenses, referring among others, to Drs. Wright and McCormack. He is described as a slender person, with light sandy hair, small blue eyes, of good physique, rather pleasing address, and about 5 feet 7 inches in height. Any information concerning him should be forwarded at once to either of the above-mentioned physicians, who will take steps to have his activities stopped.

Bequests and Donations.—The following bequests and donations have recently been announced:

James Walker Memorial Hospital, Wilmington, N. C., an annex to be used as a maternity ward and hospital for infants and children, to cost about $30,000, as a memorial to their deceased daughter, by Mr. and Mrs. James Sprunt, Wilmington.

To found a free medical dispensary in Milwaukee, $300,000, by the will of Mrs. Antoinette A. Keenan.

Evanston Hospital Association, a tract of land valued at $15,000, by James A. Patten, Evanston.

Allegheny General Hospital, Pittsburgh, for the erection, equipment and endowment of a research laboratory at a cost of $400,000, donated by the children of the late William H. Singer, Pittsburgh, in his memory.

Grandview Hospital, Philadelphia, a donation of $25,000, by two Philadelphia manufacturers, and $1,000 from a New York business man, on condition that the hospital shall be so located as to provide the greatest convenience for and be accessory to the largest number of the population of the Sellersville-Perkasie-North Penn section of the city.

War Against Mosquitoes.—War against the mosquito colonies of New York, New Jersey and Connecticut has been declared. At a conference of experts representing the United States Public Health Service and the health departments of these three states, a committee of ten was appointed which will have power to draft the proposed legislation and to carry on an educational campaign against the mosquito under the direction of the Public Health Service. The committee consists of Dr. Haven Emerson, health commissioner of New York; Surgeon Charles P. Wernenbaker, U. S. P. H. S.; Dr. L. O. Howard, chief of the department of entomology of the Department of Agriculture; James T. B. Boles; Dr. Charles F. Bolduan, director of the Bureau of Public Health and Education of the New York Department of Health; John E. Weier, park commissioner of Queens County; Dr. Edward H. Codding, New Rochelle; Dr. Alvin W. Klein, health officer of Greenwich, Conn.; John T. Sprague, Stapleton, N. Y., and James L. Laidlaw.

Psychiatrists Meet.—A meeting of the Interstate Psychiatric Association was held on November 23, at the Sheppard and Enoch Pratt Hospital, Towson, Md. A constitution was adopted which specified that residents of the states of New Jersey, Pennsylvania, Maryland and Virginia and the District of Columbia, who were interested in neurology or psychiatry, were eligible to membership, and that physicians in other states might by vote of the association be elected to associate membership. The object of the association is to bring together men who are working in special institutions, in general hospitals, or are in private practice, and who are devoting special attention to the care and treatment of mental and nervous diseases. The following officers were elected to hold office for three years: president, Dr. Henry A. Cotton, medical director of the New Jersey State Hospital, Trenton; vice president, Dr. Edward N. Brush, superintendent of the Sheppard and Enoch Pratt Hospital, Towson, Md., and secretary, Dr. Samuel T. Orton, clinical director of the Pennsylvania Hospital, West Philadelphia. Meetings will be held twice yearly.

Tetanus Following Vaccination.—Recently there has been an epidemic of smallpox in Hammond, Ind., and in West Hammond, Ill. There have been between thirty-five and forty cases of smallpox in this vicinity during the last two months. A general voluntary vaccination followed the outbreak of the disease, and approximately 2,300 persons have been vaccinated since the recognition of the disease in the community. On November 23 a boy about 9 years old died of tetanus, and on November 26 a boy about 7 years old died from the same disease. The former had been vaccinated about seventeen days preceding the recognition of the first symptoms of tetanus; in the case of the second boy the time elapsed between the date of vaccination and the onset of the first symptoms is rather indefinite but was either fifteen or twenty-two days. The doubt exists owing to the fact that two series of vaccination were made on the children in the school which the boy attended. No other persons of those vaccinated have shown symptoms at the time of this writing, December 1. Both cases occurred in West Hammond, Ill. One patient was transferred to a hospital in Hammond, Ind., where he died. Thirteen hundred persons where vaccinated in West Hammond, Ill., the vaccinations all being made with vaccine points from the same source. The period which elapsed between the dates of vaccination and the development of the symptoms was at least fifteen days.

The Nobel Prize in Medicine.—According to cable despatches R. Bárány of Vienna has been selected as the recipient of the 1914 Nobel prize in medicine, as already mentioned, for his research on physiology and pathology of the cochlea and vestibule of the ear. One of his principal works was on the nervous disorders of the internal ear, published in Lewandowsky's "Manual of Neurology" in 1910, but his chief service to science has been in the line of topical diagnosis of cerebellar affections by means of internal ear disturbances. He is privat-docent of otology at the University of Vienna but has been a prisoner of war at Merw, in the Trans-Caspian district of Russia, since the fall of Przemysl. He is not yet 40; owing to a stiff knee he was not called to the colors but volunteered his services, and is said to have been busily pursuing his special research as long as opportunity offered in the care of the wounded. The latest news from him was to the effect that he had contracted malaria in his captivity.

This is the first Nobel prize in medicine to go to Austria. The other recipients have been Behring, Ross, Finsen, Pawlow, Koch, Cajal and Golgi, Laveran, Ehrlich and Metchnikoff, Carrel and Richet. Germany has thus received the price four times, and France three, and England, Denmark, the United States, Spain and Italy, Switzerland, Sweden, and Russia once each, unless Metchnikoff and Carrel should be credited to Russia and France respectively, instead of to Paris and New York where they reside.

The awarding of the Nobel prize in medicine for 1915 has been adjourned till 1916, and petitions have been received urging that the other prizes for 1914 be reserved in the same way till 1916.

FOREIGN

Distinguished Chemist Dies.—Raphael Meldola, eminent chemist of London, who discovered many new coal tar products and who has been for the last three years professor of organic chemistry in the University of London, died in London, November 16, aged 66.

WAR NOTES

Ambulance Donated.—Mrs. W. A. Velie, Moline, Ill., has donated an ambulance to be placed in the service of the American Red Cross in Europe.

Supplies for Harvard Unit.—The Surgical Dressings Committee has shipped ten cases of dressings consisting of sponges, cotton pads and bandages to France to be used by the Harvard Medical Unit. In addition the workers of the committee have threaded with black silk 1,000 needles, which, sterilized and carefully protected, will be delivered to Dr. Edward B. Towne to be used in brain surgery.

American Hospital Opened in Petrograd.—The American Hospital, Petrograd, was formally opened November 14. Hon. George T. Marye, American Ambassador, delivered the principal address and a portrait of Grand Duke Alexius was presented to the hospital by Russian friends. The institution was opened in 1914 with twenty beds and now has doubled its facilities.

Cesarean Section by Bomb Shell.—During the bombardment of Rheims the lying-in department of the public hospital was transferred to the cellars and the service went on without a break and without fatal infectious complications. Henrot reports that a new-born child, a fine specimen, was brought in alone and when he inquired for the mother learned that on the way to the maternity she had been killed by a shell which had torn open the abdomen and the child had only to be lifted out.

Appeal for Red Cross Contributions.—President Wilson, November 25, issued an appeal to the American public to increase their efforts to alleviate the suffering in the war area of Europe by liberal contributions. The American Red Cross thus far has received about $1,600,000 and has sent in the zone of war and maintained nearly 400 surgeons, nurses and sanitarians; has given financial aid to hospitals and other Red Cross institutes, and has purchased and transported nearly 4,000,000 pounds of hospital supplies and equipment. The resources of the American Red Cross are now reduced to less than $50,000 with which to reach the great demands of the approaching winter. Contributions may be forwarded

to any state or local headquarters of the American Red Cross or to the national headquarters, Washington, D. C.

The New Food Regulations in Germany.—The *Deutsche med. Wochenschrift* in commenting on the regulations which went into effect November 1, deplores the delay in official regulation of the food supply. "The authorities," it says, "have procrastinated from the first in this matter, notwithstanding the evil experiences of last year. The new regulations restrict the consumption of meat and lard. On Tuesdays and Fridays no meat, fresh or dried, and no meat dishes can be sold to consumers. On Mondays and Thursdays the restaurants and hotels, etc., are not to serve any kind of meat, game, poultry, fish or other dishes which are cooked with fat or bacon, and lard cannot be sold. On Saturdays no pork is to be sold to consumers. Abstention from meat and from the use of lard and other fats on the specified days has not been decreed for private households as it is expected that the well-to-do will voluntarily conform to the same restrictions. The aim of the decree is essentially to ensure the distribution to all in the most equitable manner of the supply of meat which in itself is ample. Circumstances may render it unnecessary to enforce these decrees after the consumption of meat has once been regulated. The census of domestic animals taken October 1 shows a gratifying increase in the stock of hogs. To prevent this restriction in regard to meat leading to extortionate prices for game and fish, and further to combat the excessive prices already demanded, the senate has empowered the imperial chancellor to establish maximum prices for fish and game at wholesale in the Berlin market, after conferring with experts. These wholesale rates are to prevail throughout the empire unless certain districts modify them to conform to local market conditions. When the settled prices have been thus established, communities with over 10,000 inhabitants are to set a maximum retail price. The senate has also empowered the chancellor to establish maximum prices to the producers for potatoes. These producers' prices range from 61 to 75 marks (2.75 to 3.05 marks—about 70 cents—per hundred pounds). All communities with more than 10,000 inhabitants are required to set a maximum retail price and other communities are empowered to do so. The maximum price charged by the producer in the same district as the potatoes are sold at retail must not surpass 1.3 mark. The wholesale price must be regulated according to local conditions. A decree provides further for the expropriation if need arises of all potato fields more than one hectare (about 2½ acres) in extent."

LONDON LETTER

London, Nov. 12, 1915.

Serious Financial Position of the National Health Insurance Scheme

The difficulties of the working of the insurance act in consequence of its socialistic nature, which encourages extravagance, have been pointed out from time to time in previous letters. The government estimates have been exceeded in several directions with the usual result—an increased drain on the taxpayer. At the present moment the huge cost of the war, estimated at $25,000,000 a day, prevents any increased contribution from the state being entertained. The position is well described by Mr. Kingsley Wood, a member of the National Insurance Advisory Committee and vice chairman of the Faculty of Insurance, in an address given to that body. He said that the insurance scheme for the present year would cost nearly $125,000,000. The state would have to pay nearly $35,000,000, and employers and workers the balance. The cost of central administration by the respective commissions was officially estimated at nearly $2,500,000 and stationery, printing and office accommodation would cost nearly $1,500,000 more. The government actuaries' original estimates of the state subsidy for the current year seemed likely to be exceeded by $8,500,000. In spite of these huge commitments, many urgent financial questions have arisen. There is a large deficiency in connection with women insurers. Before the war, $2,500,000 had been set aside in an endeavor to meet the situation, but this amount had to be used for other purposes. The deficiency had since increased largely on account of the great influx of women workers as a result of the present labor conditions. If a parliamentary grant was impossible—and the present insurance minister had some time ago publicly stated that at the present time it would be futile to apply for extra grants—in certain societies the male members were liable to foot the bill, while in others the whole amount would have to be borne by women insurers alone. It was a wasteful policy to allow this matter to drift, and it was unfair to old and new compulsory insurers alike. It was well worth consideration whether it would not be better now to face either the raising of the contributions or the reduction of benefits. The state of the sanatorium funds also demanded attention. Certain insurance committees had long waiting lists of consumptive insurers—there were 200 in London, for instance—but committees perforce had to reduce the number of beds, while others were limiting the amount of extra nourishment for insured persons. Even the famous cod liver oil treatment was now threatened. Again, $25,000,000 a year was being paid for medical treatment. A case has been cited of a Scottish physician who had received, under the present system, $380 in respect to a solitary patient on his panel list, and who during the year had required no medical treatment. Many thousands of persons had not yet chosen a physician, and the shortage of physicians and drugs accentuates the problem. Advocates alike of a state medical service or of the old friendly society system of medical treatment have a case on the score of economy alone. The financial arrangements with pharmacists are also admittedly unsatisfactory. Some are overpaid, and others underpaid, and recourse is now advocated to the old system of stock mixtures. The whole administration of the act cries aloud for simplification. Persistent demands are being made for an immediate and impartial inquiry.

Failure of an Attempt to Charge a Physician for Extravagant Prescribing

Another example of the chaotic condition of the insurance act is the expenditure on drugs. From the fees of physicians having no direct interest in economy, there are powers to deduct expenditure which can be shown to be extravagant. The trouble often is to show this. Recently the insurance committee of the Borough of Leicester deducted $150 from a physician's account for this cause, but he succeeded in obtaining an injunction against them in the law courts. His case was that he ordered such drugs as were requisite. The pharmaceutical committee reported to the general committee that too many drugs had been ordered by the panel physicians, and that the drug fund was insufficient to pay for the drugs ordered. An arrangement was made by which $1,000 was transferred from the medical fund to the drug fund, and this sum was allocated among the physicians on the panel by calculating the average quantity ordered by each, and requiring each physician who had ordered drugs in excess of the average to make a contribution in proportion to his excess. For the physician in question the sum was $150. The judge granted an injunction against this deduction on the grounds that the pharmaceutical committee did not investigate the question of extravagance but simply made the deduction because there was a deficit in the drug fund.

Portuguese Help for the British Wounded

Portugal is arranging hospital accommodation for wounded from the Dardanelles and from Serbia. Seven spas have been selected as suitable for the reception of our wounded. The government has offered to make structural alterations of any buildings offered by private generosity in order to fit them for hospital purposes. Hotels, sanatoriums and hospitals are being inspected in order to determine their suitability for such conversion. In addition to this, it has been proposed in the Portuguese parliament that all the public sanatoriums and grounds in the island of Madeira be handed over to the British Red Cross for the duration of the war, and that there shall be a suspension of import duties on all necessary stores and supplies. These generous proposals emphasize the traditional amity between Portugal and this country.

PARIS LETTER

Paris, Nov. 4, 1915.

Death of Professor Bouchard

Dr. Bouchard, formerly professor of general pathology and therapeutics at the Faculté de médecine de Paris, has just died after a long illness, at Lyons, aged 78. In 1879, he became professor of general pathology and therapeutics. He was elected a member of the Académie de médecine in 1886 and a member of the Académie des sciences in 1887. He became president of the latter academy as well as of the Societé de biologie.

In Professor Bouchard disappears one of the great figures of French medicine. He was both a laboratory man and a clinician. Bouchard published a large number of works on anatomy, physiology, pathology, clinical medicine, medical

chemistry and the history of medicine. He is known especially for his theory of diseases due to retardation of nutrition, his works on autointoxication, etc. In 1882 he published a "Treatise on Diseases of Nutrition," in 1892 a work on "Pathogenic Microbes," and he edited an important "Treatise on General Pathology," in five volumes, containing the work of several of his pupils. He was also editor of the *Journal de physiologie et de pathologie générale*.

Bouchard was not very popular with the medical profession. This was due, in part, to the fact that certain of his ideas, especially on the subject of the reform of the *agrégation* were not in favor and in part to the fact that he was of too authoritative a temperament to be popular.

The War

MALINGERING IN THE ARMY

At a recent session of the Société de chirurgie de Paris, Dr. Hartmann, professor of the surgical clinic in the Faculté de médecine de Paris and surgeon of the hospitals, reported some observations made by Dr. Reynès of Marseilles on several cases of phlegmon caused by injections of gasoline under the skin. The characteristic of these phlegmons, according to Reynès, is the appearance of the line of incision, which shows tissues thickened, hardened and board-like, alternating with somewhat softened, purulent points; also bands of reddish, inflammatory fungosities alternating with yellowish zones of disintegrating tissues. In other cases there is a mixture of acute phlegmon and eschar. Finally the wound exhales an unmistakable odor of gasoline, which may last for several days.

Professor Pozzi with Dr. Agasse-Lafont has observed a case of this kind. These phlegmons have a large number of differential characteristics which may be classed in the order of their importance as follows: (1) suspicious clinical symptoms such as absence of ecchymosis and grumous appearance of pus, which contains fragments of slough tissues; (2) signs showing the caustic and nonmicrobic origin of the suppuration (sterile pus unless there was contamination at the time of puncture or a secondary infection after the incision); (3) chemical signs which determine the diagnosis. One reservation should be made, however. The possibility should be kept in mind that the patient may have used for therapeutic purposes a liniment or external application, for in some cases the external use of turpentine oil may produce real phlegmons.

At a recent session of the Réunion médicale de VI-e armée, Drs. Natalelli and Henri Roger, professor of experimental and comparative pathology at the Faculté de médecine de Paris and physician of the hospitals, read an interesting paper on erythema of the face produced to simulate erysipelas. In an erysipelas service they observed, from February to June, eleven cases of erythema of the face characterized by bloating and a diffuse redness of the skin, generally less intense than in erysipelas and without peripheral swelling and by vesicles of the size of a pinhead, much smaller than the erysipelatous phlyctenae and situated as much toward the periphery and outside as in the center of the swelling. These vesicles dry rapidly, producing fine yellowish crusts of a smaller size and of shorter duration than those of eczema of the face. These erythemas are localized especially on the cheeks, forehead, submaxillary and mastoidian regions and more rarely on the nose. They are rarely accompanied by any rise in temperature or by any disturbances of the general condition. They reach their height almost at once and, if they are carefully watched, recover in a few days without any treatment. They are caused, as a few malingerers have finally confessed, by friction of the face with a rubefacient or vesicant substance, especially with a chapsia or so-called deadly carrot. Besides these sufficiently characteristic clinical data, the suspected antecedents of the subject may aid in the diagnosis, as in a case in which convalescent leave had been refused after an attack of diphtheria. As soon as punishments or threats of punishment were employed the number of cases diminished greatly.

THE FLARING UP OF LATENT INFECTION IN WOUNDS OF WAR DISTURBED BY SURGERY

A paper by Dr. Phocas gave rise to an interesting discussion on this subject during two sessions of the Société de chirurgie de Paris. After a very insignificant traumatism as well as after a major operation, infection may flare up, apparently without external cause, in a wound which appears to have recovered from the original infection. Such cases of auto-infection, which have sometimes been explained as due to latent germs, have become in recent years almost negligible in current surgical practice. They have again become a practical question in connection with wounds of war, after which they are often observed. Wounds which are granulated and no longer produce a rise of temperature again begin to cause fever on being made to bleed. A knee wound which had been drained for a long time no longer caused fever; the evening after the drains were disturbed the fever appeared. An old traumatic osteomyelitis after surgical operation became lit up again with an erysipelatous eruption and pyocyanic pus. A patient who had a limb amputated for gaseous gangrene and a reamputation performed at the end of two months on a chronically suppurating stump had another severe attack of gaseous gangrene to which he succumbed.

These facts have considerable importance. One is compelled to admit reinoculation from germs which doubtless are imprisoned and latent in the tissues, but which suddenly make irruption into the circulation after a surgical operation. These reinfections have this characteristic: They become more serious than the original infection, they suggest increased virulence, a more favorable soil, a mass inoculation and perhaps also other unknown factors of which anaphylaxis may give us a comparative idea.

Dr. Bazy, surgeon of the hospitals of Paris, thinks that what characterizes latent infection is the reproduction of the same complications under the influence of the same or analogous conditions. This is not true of at least one of the cases reported by Phocas. Bazy had previously performed an operation on a patient for a limited gangrene of the leg probably due to a ligature of the femoral artery in its lower portion. After a reamputation performed by Phocas the patient succumbed to a fulminating gaseous gangrene. When, after an operation, one observes infectious complications it is wiser, more reasonable and more practical to look to one's self, one's assistant, one's instrument, dressing, etc., for the cause rather than to the patient.

Dr. Phocas replied that it is equally possible that gaseous gangrene at the outset may have assumed a benign form, especially since gaseous gangrene does not seem to be so distinct a pathologic entity that it cannot take both benign and serious forms.

Dr. Pierre Delbet, professor of clinical surgery at the Faculté de médecine de Paris considers absolutely erroneous Bazy's assumption that a latent infection can be postulated only if the secondary manifestations are like the original ones. Germs of the same species may produce very different manifestations. Phocas has done well to call attention anew to such facts, for it is quite certain that we are exposed at present to special danger from latent infections. Secondary operations on patients after complete cicatrization, especially operations on the bones, give rise to manifestations to which we have not been accustomed.

Professor Quénu observed a soldier in whom the first two phalanxes of a finger had been destroyed three weeks previously. The wound was in excellent condition. The finger was amputated and the operation was followed by cicatrization by first intention, but tetanic complications developed, at first without fever, and finally caused the death of the patient.

Dr. Tuffier, agrégé professor at the Faculté de médecine de Paris and surgeon of the hospitals, performed, under operative conditions which left nothing to be desired, a great number of reamputations of stumps which had once suppurated but which had been cicatrized for several months. He was convinced by repeated evidence that there exist in the depths of these stumps infectious agents capable of being reactivated by a new operation and capable of producing serious results. In one case gas developed under suture.

Dr. Chaput, surgeon of the hospitals of Paris, has also observed several cases of lighting up of previous infections by surgical operations. Accordingly, especially in alcoholics who have had attacks of erysipelas, he is very sparing with secondary operations.

Dr. Delbet declared that he was not surprised at the case of tetanus observed by Quénu. He had at the time in his service two patients who had had tetanus infection in their wounds. He gave them, from time to time, injections of tetanus antitoxin and they have up to the present presented no symptoms of tetanus but it is very possible that after recovery there may be tetanus bacilli in their tissues (it is known how resistant this bacillus is in its sporulated form) and a later operation might possibly cause operative tetanus.

Dr. Schwartz, agrégé professor at the Faculté de médecine de Paris and surgeon of the hospitals, saw a few months ago a patient who had ankylosis of the shoulder after fracture of the articulation by a projectile. The joint had been mobilized and the patient was attacked with tetanus, which seemed to be due to latent infection and which took on a chronic form.

GLOVES FOR USE IN ROENTGEN-RAY WORK

Dr. Mauclaire, agrégé professor at the Faculté de médecine de Paris and surgeon of the hospitals, showed the Société de chirurgie de Paris some gloves which are very pliable and are impermeable to Roentgen rays. The solution, which is easily removed with benzine, is composed as follows:

Solution of caoutchouc	50 gm.
Benzine	50 gm.
Lead carbonate	100 gm.

The gloves, after receiving four coats of this solution on their inner side, are sterilized by being placed for an hour in alcohol. This does not alter the coating.

MASKS FOR PROTECTION AGAINST ASPHYXIATING GASES

There are for sale numerous forms of apparatus for protection against asphyxiating gases which are offered to the public without any official control. In the interests of the soldiers, the minister of war has decided that it shall be strictly forbidden for families to send such apparatus to soldiers and that the packages containing them shall be returned to the senders.

BERLIN LETTER

BERLIN, Oct. 26, 1915.

Feeding Prisoners of War

The feeding of the large number of prisoners of war has been the source of much worry for those in charge of military affairs. The drill fields which it had been proposed to use for prison camps were being used by the volunteers. Therefore, many thousands of prisoners had to be sent to any available open field, which was hurriedly converted into a camp. Tents and buildings were especially provided for shelter, and food of every sort was supplied, as well as primitive cooking facilities. Contractors were found who were willing to feed the prisoners for 60 pfennige (15 cents) per day, exclusive of bread. The authorities accepted this bid because their time and attention were taken up with other affairs. Naturally, these contracting caterers were not aware of the particular demands that might be made by the many different nationalities found among these prisoners; hence, it is easily understood that, in spite of the efforts made by the German war authorities, complaints of every sort were made. In the course of a few months these complaints became much louder and much more numerous, mainly, however, because the number of prisoners was increasing. This led to a thorough investigation and a resulting regulation of the whole question.

Professor Backhaus, referee for the "feeding of prisoners," appointed by the ministry of war, investigated the matter and published his results in the *Hamburgischen medizinischen Ueberseeheften*. His report shows clearly that the criticisms made were at variance. Some maintained that the prisoners had not been fed enough, whereas others, equally insistent, claimed that they were being fed too much, that food was being taken from the civil population as well as from the German troops and given to the prisoners, and that the public treasury was being depleted thereby. It was also said that many of the contracting caterers were enjoying huge profits. On the other hand, it must be admitted that in many prison camps no fault could be found with the care given the prisoners.

After the number of prisoners had exceeded a million, that is, more than the full strength of the army in time of peace, the Prussian ministry of war, aided by the war ministers of Bavaria, Saxony and Wurtemberg, undertook to regulate the matter. A normal feeding basis was laid down to take the place of the rules previously made, calling for sufficient nourishment or for three meals a day. This normal feeding basis was made effective for all prison camps, for those supplied by contracting caterers as well as those looked after by the government itself. In view of the fact that because of the war Germany was importing 28 per cent. less albumin and 42 per cent. less fat, a saving had to be made in these two food elements. The total diet called for consisted of 2,700 calories; that is, 85 gm. of albumin, 40 gm. of fat and 475 gm. of carbohydrates, the latter a quantity somewhat larger than that given as normal. It will be noted that the total quantity as well as the nutritional value of this menu is somewhat lower than the normal physiologic requirements of an adult man engaged in light labor. It was found, however, that this diet was sufficient for the prisoner after he had recuperated somewhat from the strenuosity of the campaign. Such prisoners as were engaged in physical labor received a 10 per cent. increase on this diet. It was taken for granted that in no case could the work done be considered hard labor. Such prisoners as were doing hard labor were receiving pay for it, and to them could be extended the privilege of enlarging on this diet by purchases made at the post store.

Besides laying down this so-called normal diet or menu, cognizance was taken of the fact that proper and suitable combinations of foods were required. To encourage the scientific construction of a menu, and also for the purpose of controlling the proposed plan through a central authority, those in charge of the prison camps were required to submit regularly to the war ministry, for investigation and approval, menus for the succeeding month. The first time such lists were submitted, many errors were discovered such as poor combinations of foods and improper division of the food elements for the various meals, unnecessary foods and tasteless combinations of foods. Gradually these menus improved. An investigation of 300 menus leads to the conclusion not only that the prisoner of war is being fed properly, but also that food is not being wasted. Furthermore, it is shown by these menus that in spite of the high prices of food, the organization in charge of the feeding of these prisoners has been able to reduce the cost from 60 pfennige (15 cents) to 52.2 pfennige (13.5 cents) per day exclusive of bread.

In some prison camps the nationality and the individuality of the prisoners must be considered in constructing the menu. Experience has shown that it is impossible to provide a menu that will please both the Russian and the Frenchman. These "national" differences must be taken into consideration, and finally also whether the prisoner is well nourished or not, sick or well, working or idle, how he is housed and how he is clothed. The humanitarian and the economic aspect of this matter also had to be considered. Two things had to be kept in mind: first of all, to conserve such foods of which there was a shortage in Germany or which were needed for the troops or the civil population and therefore had to be diverted first to these channels, and second, to keep the cost within certain limits. It was found that it was cheaper and better for the government to feed these prisoners than to deal with contractors. Therefore, all contracts were abrogated. The principal difficulty was to secure the right people to place in charge of this work. To meet this exigency, two courses, each of a week's duration, were given in Frankfort-on-the-Oder and Darmstadt for kitchen subalterns, and during the week of June 22-25, a course was given in Berlin for commissary stewards. The lectures delivered during these courses and the description of excursions made were published, constituting a comprehensive review of the subject of the feeding of prisoners. As stated above, it was necessary to consider what kinds of foods were available and the prices at which they could be obtained. This, naturally, excluded many foods. Of much greater importance than variety was the nutritional value of these foods. Investigation brought to light many curious conditions. It was thought that there was a scarcity of foods because the prices had been increased. Investigation showed, however, that enormous quantities of several foods were being kept off the market by speculators who were endeavoring to raise the prices. These deposits of food were attached by the authorities and placed on the market at normal prices. This also had its influence on other food substances. The dealers sold food in large quantities at prices which, though lower than before, still gave them a good profit.

The smaller, more isolated prison camps also made complaint at this time because of the difficulty of securing certain raw materials. The war ministry was compelled to establish a central market or depot where the most important staple foods for the use of these prison camps could be housed. Although only a short time has elapsed since these depots were established, it can be stated that the German Empire is saving 100,000 marks ($25,000) daily because it is able to supply the necessary food substances at from 15 to 20 per cent. less than formerly. At the same time the quality of these foods is under absolute control and only suitable foods are distributed.

Marriages

ABRAM LEE VAN METER, M.D., Roxbury, Boston, to Miss Elva Von MacFarlin of Parsons, Kan., at Brookline, Mass., November 10.

JOHN CHRISTOPHER WOODLAND, M.D., Jessups, Md., to Miss Margaret Stewart Owings, at Sparrows' Point, Md., November 17.

KNOX EMERSON MILLER, M.D., Washington, D.C., to Miss Noxie Bliss Miller of Berksville, Ky., October 29.

MARVIN SPEARS WHITE, M.D., Hamilton, Ala., to Miss Annie Mae Long of Tupelo, Miss., November 22.

CHARLES WILLIAM HENNEY, M.D., to Miss Margaret Elizabeth Tirney, both of Portage, Wis., October 2...

HERBERT HANDY HOWARD, M.D., to Miss Ruby G. White, both of Somerville, Boston, November 10.

JAMES WEIR ROBINSON, M.D., to Miss Mary Herbert Howe, both of Philadelphia, November 20.

Deaths

Hon. Walter Humphries Montague, M.D. University of Victoria College, Coburg, Ont., 1882; L.R.C.P. Edinburgh, 1882; aged 56; for several years a practitioner at Dunville, Ont.; for fifteen years a member of the Canadian Parliament from Ontario; a member of the Privy Council without portfolio in 1894 and a year later minister of agriculture; who removed to Winnipeg, Manitoba, in 1908 and there became a member of the Executive Council of the Province and later minister of public works; died in his apartments in the Royal Alexandra Hotel, Winnipeg, from cerebral hemorrhage, November 13.

Thomas Ayars Jones, M.D. New York University, New York City, 1880; aged 65; a Fellow of the American Medical Association, and president of the Luzerne County Medical Society in 1885; local surgeon at Ashley, Pa., for the Central Railroad of New Jersey, Wilkes-Barre-Wyoming Valley Traction Company and Lehigh and Wilkes-Barre Coal Company; one of the best-known practitioners of the Wyoming Valley; died at his home in Ashley, November 10, from heart disease.

Oswald Wayne Smith, M.D. Washington University, St. Louis, 1902; aged 39; formerly superintendent of the Washington University Hospital and Dispensary, and the O'Fallon Dispensary, and assistant registrar of his alma mater; later superintendent of the St. Louis City Hospital and then called to the superintendency of Harper Hospital, Detroit; an acknowledged expert on hospital management; died at his home in Detroit, November 12, from cerebral hemorrhage.

Charles Granville Stone, M.D. University of Maryland, Baltimore, 1872; aged 69; a member of the Medical Association of the District of Columbia; formerly a dentist; from 1896 to 1908 chief surgeon of the Washington Railway and Electric Company; surgeon to the Baltimore and Ohio Railway Company Relief Association and a director of the Casualty Hospital; died in his apartment in Washington, November 11, from the effects of a nervous breakdown.

Grace Wolcott, M.D. Women's Medical College of Pennsylvania, Philadelphia, 1884; aged 57; a Fellow of the American Medical Association and a member of the council of the Massachusetts Medical Society; consulting physician to the Trinity Dispensary and one of the founders and senior physician to the Vincent Memorial Hospital, Boston; who established an occupational camp for nervous patients at Heath, Mass.; died in that place, November 9.

Samuel Garland Slaughter, M.D. New York University, New York City, 1883; aged 54; a member of the Medical Society of Virginia; physician and surgeon to the Marshall Lodge Home and Retreat, Lynchburg, Va.; surgeon of the Lynchburg Home Guard and assistant surgeon to the Norfolk and Western Railroad; died at his home in Lynchburg, November 17, from the effects of Roentgen-ray burns received several years before.

Francis L. Galt, M.D. University of Pennsylvania, Philadelphia, 1854; aged 83; assistant surgeon in the United States Navy and later surgeon in the Confederate Navy during the Civil War and on duty on the the cruiser *Alabama;* a member of the party headed by Admiral Tucker which first explored the headwaters of the Amazon River for the Peruvian Government; died at his home, Woodside, near Upperville, Va., November 17.

Rush Wilmot Kimball, M.D. Long Island College Hospital, Brooklyn, 1890; aged 53; a Fellow of the American Medical Association; visiting physician to the W. W. Backus Hospital, Norwich, Conn., and physician to the Rock Nook Children's Home; one of the most prominent physicians of Eastern Connecticut; medical examiner of New London County; died at his home in Norwich, November 15, from angina pectoris.

Tiffin J. Shackleford, M.D. College of Physicians and Surgeons, Baltimore, 1882; aged 60; a Fellow of the American Medical Association; president of the Indiana Thirteenth District Medical Association in 1913 and formerly president of the Kosciusko County Medical Society; formerly health commissioner of Warsaw, Ind., and Kosciusko County; died at his home in Warsaw, November 17, from cerebral hemorrhage.

William Virgil Newsom, M.D. College of Physicians and Surgeons, Baltimore, 1887; aged 67; a member of the Florida Medical Association and for several years president of the Marion County Medical Association; local surgeon at Ocala, Fla., for the Seaboard Air Line Railway; visiting physician and director of the Marion County Hospital; died at his home in Ocala, November 11.

Robert Emmett Austin, M.D. Missouri Medical College, St. Louis, 1897; aged 43; a Fellow of the American Medical Association; surgeon of the Tenth U. S. Cavalry during the Spanish-American War with service in Cuba; for nine years a resident and roentgenologist of San Diego, and once president of the City Board of Health; died at his home November 13, from septicemia.

Richard Harrington Ashby, M.D. Cooper Medical College, San Francisco, 1886; aged 54; formerly a Fellow of the American Medical Association and a surgeon in the British Service; a member of the Medical Society of the State of California; died at his home in Roseville, Calif., November 16, from heart disease.

Robert Harold Mitchell, M.D. University of Pennsylvania, Philadelphia, 1898; aged 41; a Fellow of the American Medical Association and a member of the gynecologic staff of the Lucy Brinkley Hospital, Memphis, Tenn.; surgeon to the Juvenile Court and visiting physician to the Home for Incurables; died at his home in Memphis, November 14, from heart disease.

Katherine McIlheny Kollock, M.D. Women's Medical College of Pennsylvania, Philadelphia, 1887; aged 70; a Fellow of the American Medical Association; at whose suggestion the Philadelphia Board of Education instituted the present system of medical inspection of students in the High School for Girls in 1893; for thirteen years supervisor of inspection in that school; died at her home in Philadelphia, November 17.

Jasper Moss Wells, M.D. Eclectic Medical Institute, Cincinnati, 1877; aged 69; formerly a member of the Kentucky State Medical Association; for many years county clerk of Lewis County, Ky., and for thirty-seven years a practitioner of Vanceburg, Ky.; died at his home in Vanceburg, October 27, from intestinal obstruction.

Major Albert Veeder, M.D. University of Buffalo, N.Y., 1883; aged 67; a member of the Medical Society of the State of New York and said to have been the first to demonstrate the transmission of typhoid fever by the fly; a veteran of the Spanish-American War; died at his home in Lyons, N. Y., November 16.

Valentine Browne, M.D. New York University, New York City, 1875; aged 83; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; consulting physician to St. Joseph's Hospital; died at his home in Yonkers, N. Y., November 19, from angina pectoris.

James Madison Wood, M.D. Columbus (Ohio) Medical College, 1879; aged 62; a member of the Ohio State Medical Association; for many years a druggist and postmaster of Larue and later a practitioner of Hepburn, Ohio; died at his home near Hepburn, November 11, from carcinoma of the stomach.

John William Morris, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1902; aged 39; a member of the Oklahoma State Medical Association and vice president of the Sequoyah County Medical Society; died at his home in Sallisaw, Okla., September 30, from lobar pneumonia.

William Edward Warner, M.D. Western Reserve University, Cleveland, Ohio, 1881; aged 58; a Fellow of the American Medical Association; formerly of Aberdeen, S. D.; a member of the Board of Health and quarantine physician of Spanish Fork, Utah, died at his home in that place, November 20.

W. H. H. Woland (license, Ohio, 1896); aged 74; for forty-four years a practitioner of Sandusky County, Ohio; for twenty years in practice at Lindsey, and for the same length of time at Fremont, Ohio; died at his home in the latter city, November 17, from cerebral hemorrhage.

Anna Groff Smith, M.D. University of Michigan, Ann Arbor, 1892; aged 54; a Fellow of the American Medical Association; for twenty-three years a practitioner of the East Side, Toledo, Ohio; died in Flower Hospital, Toledo, November 15, two days after a surgical operation.

Marion Elizabeth Blackman, M.D. University of Michigan, Ann Arbor, 1909; aged 37; a member of the Medical Society of the State of New York, and a member of the staff of the Rochester, N. Y., State Hospital; died in Buffalo, September 3, from interstitial nephritis.

Thomas A. Wasson, M.D. Homeopathic Hospital College, Cleveland, 1886; aged 61; a member of the Medical Society of the State of New York, and health officer for the township and village of Elizabethtown, N. Y.; died at his home in Elizabethtown, November 12, from endocarditis.

William Henry Shields, M.D. New York Homeopathic Medical College, New York City, 1910; aged 41; a practitioner of Astoria, L. I., up to three weeks before his death, when he moved to Ogdensburg, N. Y.; died at his home in that city, October 24, from heart disease.

Samuel Newell Hamilton, M.D. Indiana Medical College, Indianapolis, 1875; aged 70; a Fellow of the American Medical Association; a veteran of the Civil War; once coroner of Fayette County, Ind.; died at his home in Connersville, Ind., November 18, from heart disease.

Uriah Campbell Jones, M.D. Drake University, Des Moines, Iowa, 1885; a member of the Iowa State Medical Society; aged 72; a veteran of the Civil War; a well-known practitioner and druggist of Breda, Iowa; died at his home in Breda, November 5, from carcinoma.

Terrell L. Fuller, M.D. Eclectic Medical Institute, Cincinnati, 1911; aged 27; formerly of Mayfield, Ky., but later on duty in a government hospital at Oroyo, Peru, South America; died in that place, November 3.

Willis W. Brown, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1891; a member of the Oklahoma State Medical Association; died at his home in Cameron, Okla., about November 5, from pneumonia.

John A. Reese, M.D. Medico-Chirurgical College of Philadelphia, 1883; aged 65; of Philadelphia; was struck by an automobile while crossing a street, November 11, and died at his home from his injuries.

Emmett Daniel Boaz, M.D. University of Virginia, Charlottesville, 1877; New York University, New York City, 1878; aged 60; of Covesville, Va.; died suddenly, November 8, while driving near Covesville.

John Morgan, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1867; aged more than 70; for more than half a century a resident of Neosho Falls, Kan.; died in Spokane, Wash., about November 6.

Maximilian Broening, M.D. New York University, New York City, 1868; aged 75; formerly secretary of the Clinton County (Ill.) Medical Society; died at his home in Carlyle, Ill., November 3.

John R. Papin, M.D. Missouri College, St. Louis, 1878; aged 58; for many years a practitioner of St. Louis; died in St. John's Hospital, St. Louis, November 11, from rheumatism.

George W. Delo, aged 91; for many years a practitioner of Missouri, but who retired more than forty years ago; died at his home in Springfield, Mo., October 25, from senile debility.

John H. Hammond, M.D. Hahnemann Medical College, Chicago, 1887; aged 55; died at his home in Anderson, Ind., November 12, from cerebral hemorrhage.

James Marshall Lewis, M.D. Vanderbilt University, Nashville, Tenn., 1887; aged 51; of Birmingham, Ala.; died in an infirmary in that city, November 6.

Harvey J. Ault (license, Arkansas, 1903); aged 58; died at his home in Pinnacle, Ark., about November 1.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

PROPRIETARY DIGITALIS PREPARATIONS

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following expression of its views. W. A. PUCKNER, Secretary.

It is becoming increasingly apparent that the tincture of digitalis produces the full therapeutic effects of digitalis, and that when it is properly made it is as stable as any liquid preparation of digitalis now available; and that the tincture has the systemic side actions of digitalis, including the emetic, in no greater degree than the various proprietary preparations of this drug to be found on the market.

While in itself the market price of a valuable therapeutic agent is of comparatively little moment, the fact remains that the high price at which many of the proprietary preparations of digitalis are sold — often 100 times that of an equivalent amount of the drug — serves as a constant stimulus to the exploitation of these with extravagant claims, and it is commonly sought to enhance their reputation by exaggerating the disadvantages of the official drug and its preparations.

The Council especially emphasizes the fact that this statement is not intended to lessen the efforts that are being made to find new and better preparations of digitalis; its protest is against the deliberate misrepresentations of those manufacturers who seek to magnify the difficulties in the use of digitalis, by therapeutic exaggeration on the one hand, and by an exaggeration of the side actions of digitalis and the instability of its preparations on the other.

Strophanthin and crystalline ouabain are now available in sterile solution in ampules, and afford a convenient means of promptly securing the cardiac action by intramuscular or intravenous injection.

DR. PIERCE'S PLEASANT PELLETS

"Dr. Pierce's Pleasant Pellets" are made by the World's Dispensary Medical Association, Buffalo, the same concern that exploits "Pierce's Golden Medical Discovery," "Pierce's Favorite Prescription," "Pierce's Compound Extract of Smartweed," etc. The Pierce nostrums are advertised under the shibboleth, common to the "patent medicine" maker, that their products contain only vegetable ingredients. Pierce's Pleasant Pellets are recommended to the public on the claim that:

"Being entirely vegetable in composition, these pellets operate without disturbance to the system, diet or occupation."

Elsewhere in the same advertising leaflet the public is warned against "harsh drastic pills, composed, as most of them are, of jalap, aloes, scammony, croton oil, gamboge and elaterium"—all of them, it should be noted, products of the vegetable kingdom. Some day, possibly, the public will learn that some of the most deadly poisons known to science are "purely vegetable"; when that time comes the "patent medicine" makers will probably discard the "vegetable" talking point!

No longer is the direct claim made—at least in the trade package, which is subject to federal regulation—that "Dr. Pierce's Pleasant Pellets Cure Constipation." In common with a great deal of the "patent medicine" advertising of today, the direct falsehood of the former Pierce claims has given place to the inferential falsehood. The advertising of one Pierce nostrum is used for the purpose of exploiting another. Thus the leaflet that accompanies the trade package of Pierce's Pleasant Pellets recommends the "pellets" for "suppressed menstruation"—from "taking cold"—coupled with the use of a hot sitz bath—and a "full dose of Dr.

Pierce's Compound Extract of Smartweed." The Smartweed nostrum, by the way, according to labels in our files, contains, in addition to 40 per cent. alcohol, eight tenths of a grain of opium to the fluid ounce. The "Pleasant Pellets" are also recommended in "very obstinate cases of Tetter, Salt-Rheum, Erysipelas, Eczema, Boils, Carbuncles, Scrofula, and Eruptions caused by Infectious Blood Poisons"—in connection with "Golden Medical Discovery."

"Pierce's Pleasant Purgative Pellets" were examined in the Association's laboratory, and while no exhaustive work was done, the chemists reported:

"After removal of the coating, the inner pill responded to tests for emodin and aloin. Alkaloids, mercury or phenolphthalein were not found. Whether or not other emodin-bearing drugs besides aloin were present was not determined. Essentially, Pierce's Pleasant Purgative Pellets appear to be an ordinary laxative pill."

That the active principle of aloes was found in the pills is of interest in view of the fact, already referred to, that the leaflet advertising Pierce's Pleasant Pellets warns the public against the use of purgatives composed of aloes.

Correspondence

The Case of the Bollinger Baby

To the Editor:—As Commissioner of Health of the City of Chicago I gave testimony before the coroner's jury on the subject of the right of the Bollinger baby to live.

I fear that some of the published expressions have been hastily uttered and not as the result of mature judgment. All of those who have expressed themselves have been laboring under the impression that this baby was so mentally and physically defective that were it given an opportunity to live it would become a charge on its parents and later, perhaps, on the community, and those who spoke favoring the judgment of Dr. Haiselden believed that on account of the alleged mental and physical defects it had forfeited its right to live.

When I visited the German-American Hospital eight hours before this baby died and made an examination of it and viewed the Roentgen-ray pictures I was startled to observe that this was not the defective baby that I had expected to see. At that time the baby was dying as the result of intestinal obstruction.

The defects were an imperforate anus, a deficiency in the skin around the shoulder and neck and the absence of the right external ear. The right kidney was fused with the left and connected with the bladder by one ureter. (The bladder was full of urine which was easily expressed through the urethra.) There was also absence of the coccyx. There was nothing to indicate that this child would have been mentally defective except that which would come from the absence of the sense of hearing on the right side.

The defect that caused the death of the child was an imperforate anus, the rectum extending down to within one-half inch of the outside. The making of an artificial opening was the "simple operation" which was spoken of so frequently in the press which might have saved the baby's life. In this connection I desire to state that this operation is not quite so simple as people have been led to believe and the results are not always satisfactory.

These being the facts in this particular case, a question of tremendous importance is at once raised as to whether the right of any child to live should rest wholly on the judgment of any physician. I do not want to be understood as questioning the right of any physician to act as his conscience or judgment in any particular case would dictate, and to operate or not operate in accordance therewith.

But at the same time, the life of every child should be so safeguarded by the community that it would not have to depend on the judgment of any one physician.

If we are going to depart from the recognized duty of the physician to save life regardless of what that life shall be afterward, then the state must provide some tribunal similar to that of ancient Sparta, which questioned the right of every child to live until it had been passed on by such a tribunal. Were this case to be made a precedent for future action by the physicians of our land it might lead to the loss of many valuable lives.

> Ages long will tell the story old
> Of triumphs wrought unending
> By humans and things once held as naught.

Then, again, we must remember that it would open up the way to criminal neglect. I do not believe that anybody will argue that a human life is comparable with that of the lower animals, and, while I favor eugenics so far as it tends toward the betterment of the race, no human life should ever be considered on the same basis as that of the lower animals.

The command "Thou shalt not kill," either by the sins of omission or commission, is embodied in our statutes as well as in our religion, and should never be abandoned as a fundamental principle on which to stand. And while it is true that mental and physical defectives have been a burden on society and will continue to be such, who can say that the love and care bestowed on these defectives have not enriched the minds and hearts of those who have worked with and for these unfortunates, so that in the end the world is repaid for all the trouble they have caused us?

The civic conscience of a community is an indication of the height to which its civilization has attained, and this is nowhere more manifest than in the way in which it cares for its mental and physical defectives.

The safeguards of human life must not be torn down; they have been none too strong in the past, and the case under discussion should not be used to make them any weaker.

JOHN DILL ROBERTSON, M.D., Chicago.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

POISONING FROM PRESERVED CORN

To the Editor:—On a recent morning a woman, who was enjoying at least fair health, opened some preserved corn. The package was one of three jars of the ordinary Mason type. The first and second jars were evidently bad and were discarded at once. The woman tasted of the third jar, which appeared to be a good one. It was after tasting the second or third mouthful that she decided it was no good. She did not put it on the table, and forbade any one else in the family to taste it. The contents of the three jars were thrown to the chickens, of which forty out of forty-two died after eating the corn. On the afternoon of the same day the woman complained of slight headache. The next day she took a laxative pill, and another pill was taken at night. She had some diarrhea, and the next morning felt a tightening at her throat. This continued and acted like a paralysis up to the time of her death. The bowel distress was not marked at any time. She seemed to have complete gastro-intestinal paralysis at the time of death.

What was the cause of death? Is there any literature bearing on this point? In what way did the corn, or what elements in the corn—good or bad—could have caused her death?

LEON W. HYDE, M.D., Hillsboro, Ore.

ANSWER.—Assuming that the corn in question was free from poison introduced from without, such as metallic and other poisons, there is only one reasonable explanation of the occurrence related in this instance, namely, that it concerns an instance of food poisoning from canned corn, the poisons having been produced by micro-organisms in the corn. It is possible also that the organisms in the corn may have been infectious for human beings and animals. In the chapter on food poisoning (Modern Medicine, Ed. 1, 1907, i, 223) Novy points out that the same micro-organisms that cause meat to be poisonous may produce exactly the same effects when they are introduced into vegetable food. He describes the poisoning of twenty-one persons who ate of bean salad; eleven of these persons died. The beans when opened had a peculiar odor, but showed no marked decomposition. The symptoms came on from twenty-four to thirty-six hours after eating. Novy also cites the instance of poisoning from oatmeal described by Ohlmacher. There

have recently been reported several epidemics of botulism from eating home-canned beans, home-canned pears and home-canned apricots. This subject has recently been discussed by Dickson (Botulism an Experimental Study, THE JOURNAL, Aug. 7, 1915, p. 492). The symptoms described by Dr. Hyde in this case suggest botulism. They are not of such a character, however, as to allow a specific deduction as to the particular form of poisoning that took place. The fact that so many chickens died and that the one human being who ate of the corn also died points directly to the corn as the source of the fatal agent, but, of course, the exact nature of the agent could not be determined without bacteriologic and other examinations.

NOSE-IONS

To the Editor:—The enclosed circular regarding "Nose-Ions" is one of many. Have you any data regarding it? Claims are extraordinary.

P. M. FOSHAY, M.D., Montclair, N. J.

To the Editor:—I should be glad of some information about the claims made by the Nose-Ions Company, New York.

DAVID W. WELLS, M.D., Boston.

ANSWER.—These notes of inquiry were referred to the Association laboratory for a reply. In answer the laboratory reported:

"Nose-Ions circular matter referred to is a crude attempt to impose on a scientifically trained profession with pseudo-scientific patter about ions, ionic dissociation and the positive and negative charges of ions. The only intimation regarding the composition of Nose-Ions is found in a small circular wrapped around a sample package. Here it is stated that 'Nose-Ions is composed of chemically pure Na-ions of sodium chloride, Camphor and Menthol, combined with the base, Vascline.'

"Were the matter deserving of scientific consideration it would be interesting to inquire just how the positive sodium ion was separated from the negative chlorin ion of sodium chlorid, and how the sodium ion was kept in the ionized condition while isolated. But since every positive ion exists, as such, only along with a companion negative ion, such inquiry is superfluous.

"A qualitative examination was made. From this examination it appears that Nose-Ions is essentially an ointment consisting of a petrolatum base containing some odorous principles such as camphor, menthol and eucalyptus with some salicylic acid, and some quinin, probably in the form of sulphate. 'Sodium ions,' if present at all, are present in traces only."

CHRISTIAN SCIENTISTS AND DEATH CERTIFICATES

To the Editor:—Please publish the names of the states in which Christian Science practitioners are authorized by law to sign death certificates.

J. W. R.

ANSWER.—There is no state in which Christian Scientists are specifically authorized to sign death certificates. In a few states the law may, by implication, authorize this indirectly. For example, in Maryland, Christian Scientists are regarded as practicing medicine when treating for pay, and hence would be considered as physicians and as authorized to sign death certificates as such. See *Bandel* v. *Health Department*, 193 N. Y. 133; 85 N. E. 1067. The amendment to the Ohio medical practice act for 1915 included Christian Scientists, but they are regarded as limited practitioners and not physicians. They could not be permitted to sign death certificates under this construction. Most states specifically exempt Christian Scientists from the application of the medical practice act. In these states, Christian Scientists could not sign death certificates.

DIPHTHERIA AND THE BURNING OF LEAVES

To the Editor:—The idea is prevalent in this and some surrounding towns that the burning of leaves in the fall is responsible for outbreaks of diphtheria. A few physicians are making the same claim. The assertion seems absurd to me. Is there any foundation for it?

W. H. HENRY, M.D., Hamden, Ohio.

ANSWER.—There appears to be an old superstition to the effect that the burning of leaves in the fall causes diphtheria. This superstition is probably based on the rise in the diphtheria morbidity which occurs during the fall season. The only basis for this belief would be an increased irritation in the throat which might appear coincident with the inhalation of the pungent smoke. Of course, to ascribe a direct etiology to burning leaves in diphtheria is absurd.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 11, 1916. Sec., Dr. W. H. Sanders, Montgomery.

ALASKA: Juneau, Jan. 4, 1916. Sec., Dr. Harry C. DeVighne, Juneau.

ARIZONA: Phoenix, Jan. 4-5, 1916. Sec., Dr. John Wix Thomas, National Bank of Arizona Bldg., Phoenix.

CALIFORNIA: Los Angeles, December 14, and Sacramento, Jan. 11, 1916. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

COLORADO: Denver, Jan. 4, 1916. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DELAWARE: Dover and Wilmington, December 14. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

DISTRICT OF COLUMBIA: Washington, Jan. 10, 1916. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

FLORIDA: Jacksonville, December 7-8. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

INDIANA: Indianapolis, Jan. 10, 1916. Sec., Dr. W. T. Gott, 84 State House, Indianapolis.

KENTUCKY: Louisville, December 7-9. Sec., Dr. A. T. McCormack, Bowling Green.

MARYLAND: Regular, Baltimore, December 14. Sec., Dr. J. McP. Scott, Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

MINNESOTA: Minneapolis, Jan. 4-7, 1916. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MISSOURI: St. Louis, December 13-15. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

NEW HAMPSHIRE: Concord, December 20-21. Sec., Dr. W. T. Crosby, The Beacon, Manchester.

NORTH DAKOTA: Grand Forks, Jan. 4-7, 1916. Sec., Dr. G. M. Williamson, Grand Forks.

OHIO: Columbus, December 7-9. Sec., Dr. George H. Matson, Columbus.

OKLAHOMA: Oklahoma City, Jan. 11-12, 1916. Sec., Dr. R. V. Smith, 502 Daniel Bldg., Tulsa.

OREGON: Portland, Jan. 4, 1916. Sec., Dr. L. H. Hamilton, Medical Bldg., Portland.

RHODE ISLAND: Providence, Jan. 6-7, 1916. Sec., Dr. Gardner T. Swarts, Providence.

SOUTH DAKOTA: Pierre, Jan. 11, 1916. Sec., Dr. P. B. Jenkins, Waubay.

UTAH: Salt Lake City, Jan. 3, 1916. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

VIRGINIA: Richmond, December 14-17. Sec., Dr. J. N. Barney, Fredericksburg.

WASHINGTON: Walla Walla, Jan. 4, 1916. Sec., C. N. Suttner, Baker Bldg., Walla Walla.

WISCONSIN: Madison, Jan. 11, 1916. Sec., Dr. J. M. Dodd, 220 E. Second St., Ashland.

Idaho October Report

Dr. Charles A. Dettman, secretary of the Idaho State Board of Medical Examiners, reports the practical and written examination held at Wallace, Oct. 5-7, 1915. The total number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 7, all of whom passed. Two candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Kansas Medical College, Topeka		(1913)	83
Tufts College Medical School		(1907)	80
Columbia University, College of Phys. and Surgs.		(1905)	88
Cleveland College of Physicians and Surgeons		(1898)	82
Medical College of Ohio		(1893)	75
University of Pennsylvania		(1914)	91
University of Virginia		(1897)	84

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Gross Medical College		(1902)	Utah
Jefferson Medical College		(1914)	Utah

Vermont July Report

Dr. W. Scott Nay, secretary of the Vermont State Board of Medical Registration, reports the written examination held at Burlington, July 1-3, 1915. The total number of subjects examined in was 12; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 27, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Harvard University		(1915)	86.1
Temple University		(1915)	87.2
University of Vermont	(1894) 85.2; (1904) 91.7; (1915) 76.2, 77.7, 77.7, 82.3, 82.9, 83.7, 84.4, 84.4, 84.6, 84.8, 84.8, 85, 85.8, 86.1, 86.4, 86.6, 86.9, 87, 87.1, 87.2, 87.9, 88.8, 90.5.		

Book Notices

THE GOLD-HEADED CANE. By William Macmichael, M.D. With an Introduction by Sir William Osler, B.A., M.D., F.R.C.S., and a Preface by Francis R. Packard, M.D. Cloth. Price, $3 net. Pp. 261, with 21 illustrations. New York: Paul B. Hoeber, 1915.

The coming of the holiday season is marked by the publication of a number of books especially prepared to serve as gifts or remembrances for physicians. The history of medicine and the biographies of great physicians are becoming of increasing interest to the medical profession. Among such is that delightful biographical phantasy "The Gold-Headed Cane." It is an autobiography supposedly written by a gold headed cane carried successively by Radcliffe, Mead, Askew, Pitcairn and Baillie, and presented by Dr. Baillie's widow to Sir Henry Halford, who in turn presented it to the College of Physicians of London. An introduction to the present issue of the book written by Sir William Osler calls attention to the fact that this year marks the two hundredth anniversary of the death of Radcliffe, and gives a short appreciation of the biographies contained in the book. The note by Dr. Packard is a short history of the book and its author. This edition has been prepared in a decorative binding and follows the style and illustrations of the second edition.

OPHTHALMOSCOPIC DIAGNOSIS FOR GENERAL PRACTITIONERS AND STUDENTS. By George W. Jean, A.B., M.D., Instructor in Ophthalmology, in the School of Ophthalmology of the New York Eye and Ear Infirmary. Cloth. Price, $1. Pp. 123, with 68 illustrations. New York: E. B. Meyerowitz, 1915.

The methods of ophthalmoscopic examination and the various pathologic appearances of the fundus are briefly described and profusely illustrated in this book. So far as black and white wood cuts can be of value, those used are as good as any found in the average textbook; but any attempts to illustrate the fundus of the eye, unless reproduced in the natural colors, are apt to be misleading. The beginner, for whom this book is particularly interesting, is liable to receive wrong impressions if he depends too much on the illustrations. For example, the illustration of retinal hemorrhages might be mistaken for deposits of black pigment, or even for retinitis pigmentosa; the illustration of glioma gives absolutely no clue to the striking appearance seen in this condition, and the difference between the clear-cut white spots of an old choroiditis and the yellowish-white appearance of recent exudates is not clearly defined. The pathology and treatment of certain conditions are merely mentioned.

OBSTETRICS. Edited by Joseph B. DeLee, A.M., M.D., Professor of Obstetrics, Northwestern University Medical School, with the Collaboration of Herbert M. Stowe, M.D. Practical Medicine Series. Cloth. Price, $1.25. Pp. 230, with illustrations. Chicago: Year Book Publishers, 1915.

The volume on obstetrics is one of the best representatives of this useful series, which gives a résumé of a year's progress in medicine. The editors of this volume evidently spent considerable time in the selection of abstracts and in their consideration. Practically every page contains a few notes from the editors, calling attention to fallacies or important points in the various articles which are considered. The following is an example of the practical nature of these comments. It refers to Abderhalden's test in the diagnosis of pregnancy:

> From this maze of opinions what are we to decide? I believe that, like other blood serum tests, Abderhalden's has only relative value—though this particular one is very high. It requires very careful laboratory technique and many precautions or the result is open to question. In deciding in a given case it would be a little risky to attach absolute certainty to it, yet it is very valuable in the differential diagnosis.

Of particular interest are the sections devoted to puerperal sepsis and "twilight sleep."

Exercise in Nervous Disorders.—As a prophylactic against nervous disorders, the value of exercise can hardly be overestimated. Brain workers are better for moderate exercise, but do not need much; and after 25, severe intellectual work can rarely be done by persons in athletic training.—Dana.

Medicolegal

Requirements in Attending Childbirths—Regular Physicians as Witnesses Against Others—Nonexpert Evidence as to Treatment

(Yard vs. Gibbons (Kan.), 149 Pac. R. 422)

The Supreme Court of Kansas affirms a judgment for $2,418 damages in this action for malpractice in the treatment of the plaintiff in a case of childbirth. The court holds that the petition, in which the plaintiff alleged, in substance, that the defendant was employed as a physician to care for her in her confinement, and that he negligently produced a premature delivery, causing a laceration, and also failed to advise her of her condition and to carefully and skilfully treat her after the birth of her child, by all of which she was severely injured, stated a single cause of action. It was not necessary to treat the negligence of the defendant before and after the birth of the child as separate causes of action, any more than to have treated his neglect at each call or visit as separate causes of action. There was a single employment, and any failure to treat the plaintiff with due skill and care during that period, whether before or after the birth of the child, afforded but one cause of action. A physician employed in an obstetric case is required to care for and aid the patient, not only during her confinement and the delivery of the child, but it is his duty to make a careful examination of the patient and give reasonable and proper attention to any lacerations or injuries resulting from the delivery, and if he fails in this respect or to inform the patient or those caring for her as to her condition, or to give them instructions so that they may act intelligently in the further care and treatment of the patient, he is guilty of negligence and liable for the resulting injuries.

Nor does the court think that because the defendant was an osteopath there was any error in physicians of the regular school having been permitted to testify as to the progress and condition of labor in an obstetric case, the methods of delivery, and the proper treatment of the mother after the birth of the child. It is true that, where a physician or surgeon is charged with malpractice, his treatment and advice are to be tested by the standards of the school to which he belongs. But where there is practical uniformity in the rules of practice and treatment, regular practitioners of any school are competent witnesses as to the proper diagnosis and treatment of a given case; or where a person, who holds himself out as a medical expert or healer, has no fixed rules of practice, he is still bound to treat patients with ordinary and reasonable skill and care, and competent physicians, regularly engaged in practice, are competent witnesses as to whether the treatment administered in the case was properly or negligently performed.

Ordinarily only physicians and surgeons of skill and experience are competent to testify as to whether a patient has been treated or an operation performed with a reasonable degree of skill and care, but testimony as to many matters connected with the treatment of a patient, such as the statements of the physician or surgeon, as well as the external appearances and manifest conditions, which are observable by any one, may be given by nonexpert witnesses. However, the mere fact that the witness, who was the plaintiff's mother, spoke to the defendant about attending her daughter, or performed some other friendly act in that regard, would not make her subsequent statements competent against the plaintiff, for whom the service was performed.

An instruction is approved which told the jury, among other things, that the defendant could not be heard to charge the plaintiff with contributory negligence in not having proper attention given to her injuries, if the jury believed from the evidence that, by the exercise of reasonable diligence he could and should have informed himself of the nature and extent of her injuries, and that he negligently left her in ignorance of their extent or seriousness, or he led her to believe a surgical operation unnecessary.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.
Southern Surgical and Gynecological Association, Cincinnati, Dec. 14-16.
Western Surgical Association, Des Moines, Iowa, Dec. 17-18.

NATIONAL ASSOCIATION FOR THE STUDY OF PELLAGRA

Third Triennial Meeting, held at Columbia, S. C., Oct. 21-22, 1915

The President, C. H. LAVINDER, in the Chair

The Prevalence of Pellagra: Its Possible Relation to the Rise in the Cost of Food

MR. EDGAR SYDENSTRICKER, Washington, D. C.: Published in *Public Health Reports*, Oct. 22, 1915, p. 3132, and commented on in "Studies of Pellagra," editorial, THE JOURNAL, Nov. 20, 1915, p. 1818.

DISCUSSION

DR. J. F. SILER, Washington, D. C.: The speaker has emphasized the fact that the income of cotton mill families in the South is 20 per cent. lower than that of families in New England mills: $820 per annum in the South, against $1,000 in New England. If analyzed, this difference is, to a great degree, apparent rather than real. When the winters of South Carolina are contrasted with those of New England, we can realize that an appreciable proportion of the 20 per cent. difference in annual income must be expended for coal and extra clothing. Living conditions are in other respects quite different. The monthly rental for tenements amounts only to from $1.50 to $3 in the South. In a few mills investigated by us in the South there were no rental charges for tenements. Rents in the New England mill districts are much higher. In the South frequently street car fares do not enter into the problem. The open season is much longer than in New England, and a large proportion of families have gardens from which vegetables are grown which are available from May to late fall. These factors should be considered before we attempt to draw any sweeping conclusions relative to differences in the wage scale. It is my belief that the cotton mill operative in the South is, after all, in about as good condition economically as the New England operative. Bureau of Labor statistics showed that for the five-year period 1907-1912, the wage rate for mill workers had increased only 5 per cent. In the Spartanburg district our investigations show that the average increase between 1900 and 1914 must have been about 50 per cent. In March, 1904, in one mill the average daily wage of spinners in one room was 37 cents. February, 1911, the average daily wage in this room had increased to 86 cents per day. In September, 1914, the average daily wage in the spinning room had again increased from 86 to 99 cents. These figures show that the average daily wage in 1914 was almost three times that in 1904. The productive capacity had doubled in the ten-year period, and the rate of pay had increased, while the working hours had decreased from eleven to ten per day. The wage for day labor was about 75 cents in 1900, while in 1914 it had advanced to from $1.10 to $1.20. Most operatives, however, are "piece" workers, and averaged in 1914 between $1.25 and $1.50, and some of the more efficient $2 and even $2.50 per day. In 1900, children were paid from 25 to 40 cents per day. In 1914, children from 12 to 14 years of age earned from 60 to 75 cents a day, and those from 14 to 16 usually earned from 90 cents to $1 a day. The trend in wages from 1900 to 1914 has been steadily upward. Whether or not the increase in wages has kept pace with the increase in food prices is open to argument. I feel that they get about as much for their money now as fifteen years ago. It was unusual with us to find a village in which less than 30 per cent. of the families owned their own milch cows; usually the proportion ranged from 40 to 60 per cent.

There is no doubt that the people in these villages have an excess of carbohydrates in their diet, and the amount of fresh meat consumed should be increased. Most of them are fond of hog products, which enter quite extensively into their dietary during the hog killing season, December to March. Within the past six or eight years most of the company stores have added a meat market to their equipment. In some villages fresh meat is on sale daily, and in most of them daily from September to April. The income of a cotton mill family in the Spartanburg district ranges from $40 to $175 per month, the average being between $60 and $75. We were unable to convince ourselves that pellagra had any particular predilection for families with the minimum incomes, and we encountered it with about equal frequency in families with a monthly income of $50 and those of from $90 to $150.

DR. GEORGE C. MIZELL, Atlanta, Ga.: There was a time in the South when economic conditions were very much worse than now. In 1891 and 1892, a great many suffered from want of food, but the diet of Southern people is a great deal better today than ever before. Others besides the inhabitants of mill villages have pellagra. I practice and do much investigating in mill villages, and except for the fact that there are more people in very ordinary than in well-to-do circumstances, I cannot see any difference in the incidence of pellagra, so far as the money-earning power of the family is concerned. In the suburbs of Atlanta we have many mills of which the wages are very low. It is a fact that in recent years pellagra has greatly diminished in those villages, as Griffin, Ga., where there is a high-class mill, the people are paid well and are looked after from every standpoint, both morally and physically, and pellagra has not diminished there so far as I can determine by inquiry throughout the village, without taking complete figures. Cold storage and canned meats have undergone deterioration before they reach the consumer. They bring about a condition which I think plays a part in the production of pellagra. Mr. Sydenstricker states that there is a greater consumption of lard in the South than in the North, according to population. I do not believe these are facts. I should like to ask him when he says "lard" if he does not mean lard and lard substitutes.

MR. EDGAR SYDENSTRICKER, Washington, D. C.: The statistics which I used are based on several actual investigations, not of the rural population, but of workingmen's families in the South and in other sections of the country. These investigations were made in 1901 and 1909, and also in 1907 and 1908. They cover generally the Southern states, and they cannot account for any specific variation in any particular locality. By "lard" is meant the amount of lard used in the workingman's family during the year, whether used in cooking or for any other purpose. The same is true of meats and everything else included in the list of articles of food, so far as accurate statistics could be obtained. The kinds of lard included in the data are simply classed as "lard" by the authorities who made the investigations. Nearly all of the investigations, however, were made before lard substitutes of the kind mentioned came into common use.

The wages statistics were not taken from any one factory, but from a large number of localities and mills all over the United States. They show that there has been an increase of not over 25 per cent. in the wage rates in the period from 1900 to 1913, while in many industries and instances there has been an increase of less than 5 per cent. since 1907 and 1908 in the South.

The statistics of retail food prices regularly secured by the same authority show that there has been a 60 per cent. increase in the average of prices since 1900. Between 1890 and 1900 there was an actual decrease in retail food prices for several years, and the level was practically the same in 1900 as it was in 1890. There was a fairly rapid increase in food prices from 1900 to 1907, but a very much more rapid increase after 1907 up to about the present time. The statistics were secured regularly from a large number of retail stores in over forty different localities, and are for foods ordinarily sold to workingmen and their families.

No data have been gathered in the South or from any other section, so far as I know, showing the substitution of vegetable protein foods for animal proteins.

I do not think we ought to try to draw too definite a conclusion for any specific locality from general statistics, or too general a conclusion from specific instances or localities. What we need at this stage of our study of this phase of the question are definite data relating to the actual food supply of a given community and the character of the diet toward which the actual diet of the wage-earning family is tending, whatever may be the causes or the governing conditions.

(To be continued)

SOUTHERN MEDICAL ASSOCIATION

Ninth Annual Meeting, held at Dallas, Texas, Nov. 8-11, 1915

The President, DR. OSCAR DOWLING, Shreveport, in the Chair

SYMPOSIUM ON PELLAGRA

Report of Committee on Prevention and Treatment of Pellagra

DR. H. LESLIE MOORE, Dallas, Texas: We have come to the conclusion that the ideas advanced by Dr. Joseph Goldberger of the U. S. Public Health Service are the most plausible, and that his is probably the only theory that has come anywhere near being proved. Nearly all cases of pellagra occur in persons who are not able to get the best nourishing food. Very few cases occur in the well-to-do. Dr. Goldberger observed that in certain orphanages in Mississippi in which there were probably 200 cases of pellagra, after an additional diet was prescribed, only one case recurred the following spring. He concludes that pellagra can be prevented by appropriate diet without any change in environment, whether it be hygienic or sanitary. In other words, there was no change made in the environment in any of these cases except the addition of the diet. No attention was paid to the sanitary condition.

Report of Committee from the State at Large

DR. W. L. ALLISON, Fort Worth, Texas: Pellagra has spread rapidly through the South since 1907, until now each of the Southern States can number its cases by tens of thousands. While it is true that in Europe the disease was largely among the poorer classes, this does not hold true in this country, and especially is it not true in Texas. We have no such poor in Texas as are found in Italy, and the disease is frequently found here among the well-to-do. We have every reason to believe that the disease is not directly contagious. It is a significant fact that with few exceptions, nurses and doctors handling these cases in the various institutions in which pellagra is treated have not contracted the disease. As in many other diseases, a low diet and a lowered resistance seem to be predisposing factors. That the disease is purely a dietary one is advocated by many, but this theory will not account for all the cases, nor will it explain its sudden incidence and rapid increase in this country. Many persons have developed the disease with whose diet no fault could be found. Corn as a dietary factor seems to be losing favor. The occasional failure of mild cases to respond promptly to a well-balanced diet would seem to discredit any dietary theory. The theory of Alessandrini and Scala that "pellagra is nothing more than a mineral acidosis," due to an excess of silica or alumina in the water, has met little favor and does not seem to be supported by facts. That the disease may be an infection seems to be gaining favor and has much to support it. The Thompson-McFadden Pellagra Commission points to the significant fact that no new cases developed in those mill villages having a water carriage sewerage system. This commission also reports that close connection with a previous case existed in 80 per cent. of their cases. There is nothing to show that the disease is hereditary. Morphin habitués seem fairly susceptible. The incubation period of the disease seems to be from two to six weeks. All animal inoculation experiments have been negative, with possibly one or two exceptions. The greater prevalence of the disease among women between the ages of 20 and 45 makes it appear that the causative agent is to be found about the home in the daytime. The symptoms of the disease are all in the nature of an intoxication more or less chronic in its course. When the disease first appeared in this country, 67 per cent. of the patients died, while today probably of these 80 per cent. get permanently well. The prognosis for complete recovery diminishes with age, being very unfavorable in old age, although even the old recover. In view of the rapid increase of pellagra, more attention should be paid to the prophylactic treatment. Everything should be done to improve the sanitary and hygienic conditions about the home. A well balanced and nourishing diet will do much to increase the individual resistance and prevent the disease, even if it be of infectious origin. A sanitary water carriage sewerage system is certainly a step in the right direction. Active treatment of a case of pellagra should be begun by placing the patient in bed for at least a few weeks, depending on the severity and progress of the case. This of itself lessens the force of most diseases and conserves body energy. Hydrochloric acid should always be supplied where it is diminished or absent. Of the many remedies, thymol, quinin hydrobromid, picric acid and the arsenical preparations, especially sodium cacodylate, are apparently the most popular.

Pellagra in Texas

DR. K. H. BEALL, Fort Worth, Texas: The state government has done very little to check the ravages of this new enemy. Last year this disease killed 500 of our citizens and made invalids of many thousand more. Statistics show that women are much more frequently attacked with the disease when of certain age than men of certain age, or when they become much less resistant to its ravages.

Drugs in Pellagra

DR. W. T. WILSON, Navasota, Texas: Up to Nov. 1, 1915, I treated 190 cases of pellagra, and I have data on 310 cases treated by other physicians. Of this number thirty-five patients died, of whom fourteen were reported as having been treated with picric acid; ten were terminal cases and of the typhoid type, and the patients died within fourteen days after treatment was begun; four had tuberculosis associated with pellagra. Two had nephritis complicating. Thirty-seven with severe mental symptoms are reported recovered. My report is not complete on the number of patients improved or not improved. I failed to ask for these data, but from conversation with many physicians I do not think the percentage in either case will exceed 7 per cent., if it even runs that high. The disease does not become very serious before the middle of May. Most of the thirty-five deaths reported occurred during the months of July, August and September. In pellagra of recent origin, picric acid is of no value, that is, when used internally and as a gargle. In severe types or those with malarial symptoms, quinin hypodermically should be used first, the picric acid following. In the chronic forms, picric acid and sodium cacodylate should be alternated or given at the same time, and also some sodium bicarbonate at intervals. Several physicians report good results from the use of thymol in the treatment of this disease.

Blood in Pellagra

DR. BEVERLY YOUNG, San Antonio, Texas: The red cells, hemoglobin, and hemoglobin index vary greatly. Taking the peripheral blood as an index, the small mononuclear leukocytes are markedly increased, while the other cells, except the polynuclears, are slightly, if at all, affected. Some cases show slight eosinophilia, but this was variable, and in every case in which the eosinophilia was marked, I was able to find the ova of intestinal parasites. A high lymphocyte count is usually of good prognostic import. This high count usually persists not to the same extent, but above normal, for weeks and sometimes months after the acute symptoms subside and the patient is in excellent physical condition. The cases developing after admission to the hospital, with two exceptions, were among those who were fairly well nourished and eating a well-balanced diet, and

several patients observed during the same period of time who persistently refused nourishment of any kind did not develop pellagra; while the lymphocytes were increased in these cases, they were neither so markedly nor so persistently increased as in the pellagrins. Two of these cases were particularly important for comparison since the patients were so persistent in their fast that they died of exhaustion in spite of forced feeding.

Etiology of Pellagra with Reference to Amebic Invasion

DR. W. A. DEARMAN, Long Beach, Miss.: While Goldberger is of the opinion that pellagra is caused by the lack of a well-balanced ration; that as a prophylactic as well as a curative measure individuals should be encouraged to eat liberally of peas, beans and other legumes, and that the whole solution of the pellagra problem depends on this principle, is not supported in toto by the end-results of the Thompson-McFadden Commission. I have been able to demonstrate the presence of amebas in the centrifuged urine of about 50 per cent. of pellagrins that came under my observation. About 40 per cent. showed pyuria. The amebas were large and small, and they were very sluggish in their movements. Sometimes a cell resembling an encysted ameba would have to be recognized and kept under close observation in order to observe motility; some were actively motile. While I have no evidence at hand to prove conclusively that amebic invasion is responsible for pellagra, the symptomatology, the clinical course and the postmortem findings run parallel with the depredations often observed in a profound amebic invasion.

Discussion on Pellagra

DR. ALLEN W. FREEMAN, Washington, D.C.: The evidence is strong that there is a definite relationship in many cases between the incidence of pellagra and certain deficiencies in the diet. Dr. Goldberger does not claim, and does not pretend to prove, that diet is the only factor in pellagra, but he has produced pellagra so clean cut that we must either totally disprove his findings or attempt to put the regimen he recommends into effect.

DR. STEWART J. ROBERTS, Atlanta: The one thing we most need in this country at present in regard to the etiology of pellagra is absolute honesty in realizing that we do not know the cause of the disease because we cannot prove it. By the cure of the disease I understand that a patient who has had the disease is absolutely free of it forever unless reinfected. It is one thing for a pellagrin to recover from an attack of pellagra, and quite a different thing for a pellagrin to recover from the disease which we call pellagra.

DR. O. M. MARCHMAN, Dallas, Texas: Last August our city society decided to hold a pellagra clinic, and we had at this clinic twenty-five or thirty patients in different stages of the disease. Physicians of our county and surrounding counties have used every available remedy, and not only the patients at the clinic but others treated in the various institutions were relieved in a like manner by all of these various treatments with a generous diet. We have had probably 100 cases of pellagra in Dallas since last August, an increase of 100 per cent. over previous years. These pellagrins were from the poorest class and were fed a one-sided or limited diet. Many of these patients were put on a generous diet, without any medical treatment whatsoever, and recovered as rapidly as those treated by various shotgun prescriptions.

DR. ALLAN EUSTIS, New Orleans: I have heard no evidence as yet to counteract Goldberger's ideas. I do not believe any of us are able to pass on Goldberger's results until we see the published details of his investigation. Dr. Goldberger does not claim that he has found the cause and a cure for pellagra, but I believe the condition can be remedied in great part.

DR. JOHN E. STINSON, Chickasha, Okla.: I believe that pellagra is infectious. The symptoms of the disease are hard to combat by any method of treatment. I do not believe any true case of pellagra has ever been cured.

DR. JAMES A. HAYNE, Columbia, S. C.: In South Carolina, up to the present time we have had 1,200 deaths from pellagra. The death rate from tyhpoid fever in South Carolina is only twenty-six per hundred thousand. It is about equal to the death rate from tuberculosis. It is a little less than the death rate from the circulatory diseases, such as heart and kidney disease.

DR. JOHN L. JELKS, Memphis, Tenn.: In cases of infection of the intestine, such as we have in pellagra, certain diets are very good, while others are very bad. Patients with amebiasis will manifest the same train of symptoms as those encountered in cases of pellagra. Note the number of cases of amebiasis and the number of cases of pellagra in which there is pain in the back of the neck. Note the number of cases of pellagra in which you will find marked melancholia. I believe that pellagra is an infection which takes place primarily in the intestine.

DR. J. R. LEHMANN, Dallas, Texas: It has been shown that we carry in our mouths the organisms of pneumonia, and yet not all of us get pneumonia. But when conditions are ripe, we develop pneumonia. Is it not possible that similarly in pellagra, when conditions exist which favor a lowering of the resistance, the disease develops?

DR. A. A. HEROLD, Shreveport, La.: I believe diet is the principal causative factor in pellagra. In Catto Parish, agricultural and mineral oil regions are side by side. There is practically no difference between the people who live there. In the mineral oil districts, sanitation is more imperfect; flies and mosquitoes are more numerous in the oil region, and insect-borne diseases, such as typhoid and malaria, are much more common in the oil districts than in the agricultural; yet not one case of pellagra has been reported from the oil fields, but 200 cases have been reported from the agricultural regions. There is one explanation for that. The usual ration of the farmer is fat meat, cornmeal and some syrup. On the other hand, the workers in the oil regions will not stand for poor rations. They live on a thoroughly mixed and varied diet and do not develop pellagra.

DR. E. H. MARTIN, Hot Springs, Ark.: It has been an axiom with me for several years that an absolute preventive of pellagra is a bank account. A man who has money and who is well nourished will not get pellagra, and the man who has pellagra, who gets well nourished, will recover.

DR. A. L. LEVIN, New Orleans: A study of the intestinal tract is most important in making a diagnosis of pellagra. There is a class of cases of pellagra in which the skin symptoms are lacking. Involvement of the nervous system is not present, and the only symptom is the involvement of the gastro-intestinal tract. Patients will complain of stomach disturbance; they have symptoms of heaviness and fulness and pain, with slight cramps and loose bowels. The fact that pellagra is on the increase is due to the fact that we are not sufficiently expert as yet to differentiate those cases which are pellagra from those which are not.

DR. CHARLES W. GARRISON, Little Rock, Ark.: Every speaker, representing either the infectious or opposite theory of pellagra, has admitted that diet is one of the most essential and important factors in prevention and treatment of the disease.

DR. FRANK H. CLARKE, Lexington, Ky.: Lexington is a splendid agricultural district; it is a short-horn and Jersey cattle country, and a fine race horse country: many wealthy people have settled there, and yet pellagra has appeared among the rich as well as among the poor.

DR. BRUCE, Alabama: I recall two patients who returned from the Johns Hopkins Hospital, who were treated there for amebiasis with secondary anemia. These patients came under my observation during this year with the later symptoms of pellagra. The skin symptoms had shown up and the severe nervous symptoms. In the beginning, these cases were incorrectly diagnosed and were treated as instances of amebic dysentery, but since developed all of the later symptoms of pellagra.

DR. LOUIS LEROY, Memphis, Tenn.: Whenever there is a lesion in the intestinal mucosa, there is a possible port of entry for pellagra. When one case occurs in any locality, if there are open earth closets, if there is ground infection, more cases can be looked for pretty soon.

DR. WILLIAM KRAUSS, Memphis, Tenn.: With reference to the open closet, until very recent times, we had no pellagra originating in the city of Memphis; but recently we have seen many cases of the disease which originated there, and we have no open closets in our city. Something was said about personal cleanliness, and consequently one might infer from that that only persons who are filthy in their habits contract pellagra; and yet we have an increasing number of cases of the disease in Memphis among the best people who live in the best surroundings, who take two baths a day, and eat good, nourishing food.

DR. THOMPSON FRAZER, Asheville, N. C.: I have seen from seventy-five to 100 cases of pellagra, but in the last two years only a few, which I find is in keeping with the history of the disease, which has tended to spread from one section to another.

DR. C. B. BOWYER, Stonega, Va.: In the coal mining district we have never seen a case of pellagra in a miner. Dr. McCormack says that pellagra, so far as he knows, has never developed in miners in Kentucky.

DR. W. L. ALLISON, Fort Worth, Texas: I now agree with Goldberger that diet stands as a predisposing factor. When you feed pellagrins good, nourishing food, many of them recover. It is not true in Texas that pellagra occurs only among the poor.

(*To be continued*)

MISSISSIPPI VALLEY MEDICAL ASSOCIATION

Forty-First Annual Meeting, held at Lexington, Ky., Oct. 19-21, 1915

(*Concluded from page 1943*)

Etiologic Relationship Existing Between Gastric Ulcer and Gastric Cancer

DR. FRANK SMITHIES, Chicago: It seems to have been shown that benign gastric ulcer can be produced in a multitude of ways, the method of production having only relative effect on the ulcer resulting, pathologically. It seems that in a given gastric ulcer it is impossible to prognosticate its course, duration or type of termination. Free excision of all chronic gastric ulcers should be performed whenever such procedure is mechanically possible.

DISCUSSION

DR. CHARLES G. LUCAS, Louisville, Ky.: None of us are competent to give a statement as to when an ulcer may become malignant, nor how long it will continue. I have in mind a patient who had a tumor of six months' standing before seeking consultation. A laparotomy was done and the tumor was found to be inoperable. Patients with ulcer of the stomach should be placed in bed as soon as they come under the care of the internist, and they should then be treated carefully for from four to five weeks. They should report often and submit to frequent examination. If, after six or seven weeks of effort of this kind, no results are obtained, then a surgeon should be called. These cases should be treated by both the internist and the surgeon working together, and finally they should come back to the internist.

DR. WILLARD J. STONE, Toledo, Ohio: I should like to ask Dr. Smithies what percentage of cases of gastric and duodenal ulcer in his experience shows a positive Wassermann reaction?

DR. CHAUNCEY DOWDEN, Louisville, Ky.: If conditions incidental to appendicitis cause ulcer, then obstipation and constipation become important etiologic factors. If appendicitis will cause gastric ulcer, why will not chronic obstipation bring about a like condition? In my opinion it may even produce pyloric spasm. If we have a condition that will produce pyloric spasm, we also have a condition which will in time cause gastric ulcer. I should like to impress on the internist the importance of treating the ulcer patient before the condition becomes ulcer. The majority of patients who come to us showing a condition of hyperacidity are in all probability ulcer patients. This is the time when they need proper attention and, in all probability, the right treatment administered at this time would prevent the development of duodenal or gastric ulcer.

DR. FRANK SMITHIES, Chicago: In our proved ulcer cases, the ratio of positive Wassermann was 1:300. One of the first points in the cure of disease is to remove all the foci of infection in the mouth, throat and nose, and we should also look out for an infected appendix or an infected gallbladder. If we let these organs pass by unnoticed we are simply locking the door after the horse has escaped.

The Heart and Blood Vessels in Tuberculosis

DR. FRANCIS M. POTTENGER, Monrovia, Calif.: Tuberculosis may affect the blood vessels either from within or from without, and the lesion may be of all degrees of severity from that of every slight trauma to necrosis. Sometimes an infection is followed by an opening in the vessel wall and hemorrhage; at other times an exudation results which goes on to repair, and again an endarteritis with obliteration of the lumen occurs. It seems probable that many of the hemorrhages in tuberculosis, particularly those in which only small amounts of blood are expectorated, may be due to the injury of the vessels resulting from the action of toxins, or the formation of tubercles in the walls of the vessels. The capillaries are most commonly affected, while small veins and arteries are less commonly so. Tubercles may be found in the walls of any vessels of the body, including the aorta. This being true, it is surprising that miliary tuberculosis is not a more common infection than it is. That it is not is probably due to the fact that the vessel is often occluded by the inflammatory process so that bacilli do not get into the blood stream, and protective cell sensitization and antibodies reduce the virulence of or destroy the bacilli which gain entrance to the blood stream before they find lodgment in the tissues, in those patients in whom infection has been present long enough to build up a specific immunity.

For the heart muscle itself I have great confidence in digitalis and citrated caffein. If the early symptoms are recognized and the patient is put in the recumbent position and given digitalis in proper doses, the crisis can often be averted. Digitalis strengthens the heart's contractions, and in this way probably affords better nutrition to the organ. If digitalis is to be used, it should be used in doses sufficiently large to produce an effect. I use a standardized tincture in doses of from 10 to 15 minims three times a day until the pulse improves or the physiologic effect is reached. I then discontinue the remedy for three days and repeat again, giving the remedy three or four days and then withholding it for a like period. If the case is urgent, I often give digitalis intravenously in 15 minim doses three times a day until the effect is produced. Citrated caffein can be given in 3 grain doses every four hours and continued as long as necessary.

The patient should be fed nourishing food in concentrated form. The bowels should be kept free to relieve any toxins that can be removed through the alimentary canal. The important thing in the handling of these cases is to recognize them early, and to treat them properly. These degenerative changes in the heart muscle may threaten the patient's life and yet the heart may recover itself as the patient improves.

Spasmophilia

DR. J. P. SEDGWICK, Minneapolis: In the acute and subacute cases under 1 year, with high electrical reactions, the results obtained with large doses of calcium chlorid are brilliant. In the more chronic and very severe cases, calcium is of definite value. I have also used subcutaneous injection of 20 c.c. of a 0.125 per cent. solution of magnesium sulphate. The results with this method have also been satisfactory, but the injections are painful and frighten the older children. The electrical reactions give us a means of diagnosing this condition whether active or latent, thus distinguishing it in its various manifestations, such as the convulsions from epilepsy and the laryngospasm from inflammatory croup. Laryngospasm, general convulsions, tetany in children, spasmodic apnea, and the Chvostek and Trousseau phenomena are manifestations of the same diathesis or

condition. The condition is closely related to some metabolic disturbance, probably of the calcium salts, and is markedly benefited by a carbohydrate, cow's milk free, or a breast milk diet. Phosphorus and cod liver oil are of value by the effect on the calcium retention. Calcium and magnesium give quicker and more definite results. The prognosis is usually good, in the cases in which treatment is begun early.

Diagnosis of Renal Infections

DR. JOHN R. CAULK, St. Louis: Of 182 cases, only 17.7 per cent. appeared with a diagnosis of kidney disease. It is striking that not a single case of pyonephrosis came in with a diagnosis of renal infection, and it was confused with malaria in a high percentage of cases. The average duration of symptoms in this series has been three years and six months, so long in many cases as to deprive the individual of satisfactory chances of recovery. Renal pain was present in 40.9 per cent., was most common in pyonephrosis and nephrolithiasis, about 70 per cent., and least common in tuberculosis, 17.6 per cent. Fever was present in 15.7 per cent. As to faulty diagnosis, appendicitis appears in 6.6 per cent. of all the cases; it is most commonly confused with nephrolithiasis, 26.5 per cent., and 6.5 per cent. in pyelitis. It was not confused with pyelonephritis, pyonephrosis or tuberculosis. Bladder trouble was diagnosed in 60 per cent. of all cases, most common in tuberculosis, 93 per cent., and least in nephrolithiasis, 30 per cent. Pus was present in 93 per cent., casts in 7 per cent., most of these in pyelonephritis, 35 per cent. The general average is extremely low.

The colon bacillus was found in 57 per cent. of the cases, the staphylococcus in 23.5 per cent.; 17.5 per cent. were mixed. Tuberculosis was present in 9.4 per cent. of all cases. The functional test was diminished in 68.7 per cent. of the cases. It showed its most marked diminution in pyonephrosis, and its slightest in pyelitis. The Roentgen ray was positive in 30.4 per cent. of all cases. Cystoscopic examination showed changes in the bladder wall in 58.9 per cent.

Mechanics of Renal Infection

DR. EDWARD L. KEYES, JR., New York: Renal colic is an acute stoppage of the ureter, the cause of which is usually a small stone or a slight kink. On being called to such a case, we should immediately administer morphin to the point of relieving pain, not only for the purpose of consoling the sufferer, but also for the purpose of curing the condition, for if we can relieve the pain, and thereby relax the spasm, we actually relieve the retention, and permit the unfolding of the kink for the passage of urine about the stone, or even the passage of the stone itself. In the second place, we have here a clue to the mystery that surrounds irrigation of the renal pelvis. Much of the benefit attributed to this treatment is undoubtedly due to the passage of the ureteral catheter, for it is to be noted that many cures attributed to this treatment follow the first or the second washing. Such cures are due to mechanical relief of slight obstructions. I have several times relieved acute renal infection by ureteral catheterization, and Dr. Howard Lilienthal some years ago recorded several striking illustrations of the therapeutic effect of ureteral catheterization in acute renal infection.

Prolapse of Bladder and Uterus

DR. THOMAS J. WATKINS, Chicago: The pathologic changes in the part of the bladder wall which is attached to the vaginal wall have not received sufficient attention. These changes are due to stretching of this part of the bladder wall, and produce vesical symptoms. The urethra is usually displaced downward, and disturbs continence of urine. The pathologic changes in the uterus result mostly from circulatory disturbances, such as congestion, edema, varices and hyperplasia. The following operations are advised, the choice depending on the amount of prolapse, and the age of the patient as regards future pregnancies: (1) an advancement operation; (2) fixation of the round ligaments to the anterior vaginal wall and fascia, and (3) the transposition operation, transposing the relative position of the bladder and uterus. This is also called the interposition operation. Partial excision or amputation of the cervix is done with all of these operations as may be indicated, and a perineorrhaphy is made. The advancement operation consists chiefly in advancing the vaginal wall, including the submucous connective tissue, on the cervix. This operation gives excellent results in cases of a moderate amount of prolapse, and does not interfere with subsequent pregnancies. Vaginal attachment of the round ligaments into the vaginal wall is done in conjunction with the advancement operation in cases with a greater amount of prolapse, during the child-bearing period, and in cases of retroposition of the uterus. The transposition operation is the one of election after the menopause. The fundus of the uterus is attached to the connective tissue and vagina sufficiently low to make recurrence of the bladder hernia impossible. I have had no recurrence of cystocele after this operation, which I have been doing for seventeen years. The uterus is never in obstruction in the vagina when so sutured. Modifications of the operation are given for cases of very large uterus and for cases of complete prolapse with a very small uterus. The cavities of the uterus and vagina may be completely closed in very extensive cases of prolapse in elderly women in whom there is no objection to occlusion of the vaginal canal.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

November, LXXII, No. 5, pp. 769-944

1 *Present Tendencies in Gynecologic and Obstetric Practice. C. L. Bonifield, Cincinnati.
2 *Local Anesthesia in Herniotomy. J. H. Jacobson, Toledo.
3 *Case of Gallstone Causing Intestinal Obstruction and Volvulus. R. B. Hall, Cincinnati.
4 *Cholecystectomy vs. Cholecystostomy. L. W. Swope, Pittsburgh.
5 *Unusual Contents of Inguinal Hernia; Report of Case. C. W. Moots, Toledo.
6 Surgery of Appendix. J. W. Keefe, Providence, R. I.
7 *Prognostic Sign in Acute Suppurative Peritonitis. H. O. Pantzer, Indianapolis.
8 *Rare Congenital Abnormality of Sigmoid. B. Van Sweringen, Fort Wayne, Ind.
9 Postoperative Ureteral Fistula. H. D. Furniss, New York.
10 *Mesenteric Thromboses; Report of Two Cases. W. E. Darnall, Atlantic City, N. J.
11 Remove Uterus Instead of Ovaries for Incurable Cases of Menstrual Disorders. J. H. Carstens, Detroit.
12 Use of Sodium Citrate for Direct Blood Transfusion. C. B. Schildecker, Pittsburgh.
13 Newer Conceptions of Intestinal Stasis. G. W. Crile, Cleveland.
14 "Gas Pains." G. K. Dickinson, Jersey City, N. J.
15 *Use of Luteum Extract in Treatment of Menstrual Disorders. A. P. Leighton, Jr., Portland, Me.
16 *Present Status of Twilight Sleep in Obstetrics; Study of Over Two Thousand Cases. A. J. Rongy, New York.
17 Acute Appendicitis in Children. K. H. Aynesworth, Waco, Texas.

1 and 10. Abstracted in THE JOURNAL, Oct. 2, p. 1213.
2 and 3. Abstracted in THE JOURNAL, Oct. 2, p. 1211.
4, 5, 7 and 8. Abstracted in THE JOURNAL, Oct. 2, p. 1212.
15 and 16. Abstracted in THE JOURNAL, Oct. 2, p. 1213.

Annals of Surgery, Philadelphia

November, LXII, No. 5, pp. 513-640

18 Mesenteric Thrombosis; Report of Cases. E. Eliot, Jr., and J. W. Jameson, New York.
19 *Case of Splenectomy. C. L. Scudder, Boston.
20 *Diagnosis of Appendicitis in Early Typhoid. R. Winslow, Baltimore.
21 Typhoid Perforation. J. H. Gibbon, Philadelphia.
22 Frequency of Chest Complications Among Wounded. K. Taylor, Paris.
23 *Transverse Abdominal Incision. W. Meyer, New York.
24 Closure of Mucocutaneous Fecal Fistula. E. Beer, New York.
25 Anatomic Study of Femoral Hernia. T. T. Thomas, Philadelphia.
26 Clinical Status of Autograft. A. A. Law, Minneapolis.
27 Fractures of Femur. C. R. Steinke, Philadelphia.
28 End Results in Fractures of Both Bones of Leg. R. L. John, Philadelphia.

19. **Case of Splenectomy.**—Scudder records a case of splenic anemia which terminated fatally following splenectomy. A thrombosis occurred in a vascular system of the mesenteric

not directly connected with the vascular system of the spleen. At the second operation the gangrene of the small intestine was found definitely localized and had occurred independently of any plugging thrombosis of the splenic vessels proximal to the ligatures placed at the time of the splenectomy.

20. **Appendicitis in Early Typhoid.**—Winslow reports four cases occurring in the same hospital at almost the same time and treated by several different surgeons. From the appearance of the appendixes at the time of operation, and from the subsequent course of the case, he says, it is evident that unnecessary operations were done during the active period of a dangerous disease. The first patient was taken suddenly ill, with headache and pain in the right side, while at work. She had been in good health up to this time. The second patient appears to have had a general diffuse tenderness exaggerated on pressure in the appendical area on admission to the hospital. Apparently the disease began five days previously with chilly sensations followed by fever, and not with pain. The third patient was taken sick with abdominal pain, headache and a stiff feeling of the abdomen. There is no history of preceding fever. The fourth patient was taken with pain and slight elevation of temperature. In three of these four cases pain appears to have been the symptom that first attracted the patients' attention and not fever. Chilliness and fever was the prominent feature of the onset of one case. Headache was noted in two cases as one of the initial symptoms, and nausea and vomiting in two patients. The leukocyte was 8,200, 8,000 and 10,000 in three cases, and in one case the polynuclears were 74 per cent., small mononuclears 22 per cent. and large mononuclears 4 per cent., but the leukocyte count was not recorded. One patient had continuous pain in the right iliac region, with tenderness and muscular rigidity at McBurney's point. A second had diffuse abdominal tenderness with distinct muscular spasm on deep pressure over the appendical region. A third had pain in the right side of the abdomen, tenderness but not much rigidity. In none of these cases was the Widal reaction positive at the time of the operation, but became so in each subsequently. Rose spots also do not appear at such an early period of typhoid. In all these cases the appendix was somewhat congested, possibly thickened, but not acutely inflamed, while the large and small intestines were also more hyperemic than normal. The mesenteric and prevertebral chains of glands were also markedly enlarged in most of the cases.

Winslow believes mistaken diagnosis of appendicitis in early typhoid is by no means uncommon. The leukocyte count is probably the most reliable diagnostic sign, and it is usually low in typhoid and markedly increased in appendicitis, though at times there may be a low leukocyte count in serious and even fatal appendicitis. There is less muscular rigidity and tenderness in these typhoid cases than in cases of genuine appendicitis.

23. **Transverse Abdominal Incision.**—Meyer has tried the transverse abdominal incision of Braunschweig and Perthes in eight cases and has been so favorably impressed with it, that he feels it should be used more frequently.

Archives of Internal Medicine, Chicago

November, XVI, No. 5, pp. 693-892

29 *Carbohydrate Utilization in Diabetes. E. P. Joslin, Boston.
30 *Renal Function as Measured by Elimination of Fluids, Salt and Nitrogen and Specific Gravity of Urine. H. O. Mosenthal, Baltimore.
31 *Differentiation of Cerebral and Cardiac Types of Hyperarterial Tension in Vascular Disease. W. J. Stone, Toledo.
32 Treatment of Cardiac Insufficiency by New Method of Exercise with Dumb-Bells and Bars. T. B. Barringer, Jr., and J. Teschner, New York.
33 *Resistance of Red Blood Cells to Hypotonic Salt Solution in Various Anemias. L. W. Hill, Boston.
34 *Study of Case of Auricular Flutter. S. A. Levine and C. Frothingham, Jr., Boston.
35 Sino-Auricular Heart Block; Report of Case in Man. J. A. E. Eyster and J. S. Evans, Madison, Wis.
36 *Clinical Studies on Respiration; Effect of Carbon Dioxid in Inspired Air on Patients with Cardiac Disease. F. W. Peabody, Boston.
37 *Poisoning by Mercuric Chlorid and Its Treatment. S. W. Lambert, and H. S. Patterson, New York.
38 *Coagulation Test for Syphilis, as Devised by Hirschfeld and Klinger. H. N. Cole and S. Eng-Kiu Chiu, Cleveland.

29. **Carbohydrate Utilization in Diabetes.**—Joslin closes his article as follows: It is gratifying to be able to record that the recent experimental evidence confirms the old clinical view that the severe diabetic still retains power to utilize a portion of the carbohydrate of his diet, small though it may be, and that herein lies renewed hope for the success of treatment.

30. **Renal Function.**—The nephritic test meal, as suggested by Hedinger and Schlayer, and elaborated by Mosenthal in this paper, has not only proved itself to be an admirable test for renal function, but also in many cases has been of great value in diagnosing cardiac, renal and other conditions. The test is a qualitative one of the mode of urinary function as measured by the specific gravity, salt, nitrogen and water excretion in two-hourly periods during the day, and for a twelve-hour period at night. In chronic diffuse (parenchymatous) nephritis, the condition of renal function is characterized by its variability. In these instances, the results of the test meal have proved to be extremely valuable in giving an idea of the status of salt, nitrogen and water excretion, besides the picture of renal efficiency as a whole. The findings in myocardial insufficiency vary according to the activity of the heart. Distinct differences are found with myocardial decompensation and the accumulation of edema, the period of eliminating edema, and subsequently, when cardiac compensation is again fully established, it requires some time before the kidney resumes its normal activity. This intervening period is indicated by a tendency to a low, fixed specific gravity and a nocturnal polyuria. During the period of full myocardial decompensation the results of kidney activity are characteristic, the specific gravity is markedly fixed at the level of about 1.020, the salt output is diminished, that of nitrogen is high, in marked contrast to the salt, and there is oliguria. When chronic nephritis and cardiac decompensation coexist, as they so often do in hypertensive nephritis, the urine may exhibit the characteristics due to either lesion. The determining factor is probably to be found in the chronic nephritis which may or may not be so far advanced as to present an unchanging barrier to the influence of renal congestion.

31. **Differentiation of Cerebral and Cardiac Types in Vascular Disease.**—Stone urges that the determination of systolic and diastolic pressures by the auscultatory method should supplant the palpatory method. The pulse pressure measures the energy of the heart in systole in excess of the diastolic pressure. For clinical purposes it represents the load of the heart. Under normal conditions, it is approximately 50 per cent. of the diastolic pressure. Since the diastolic pressure represents the constant pressure between systoles, it is a better index of peripheral resistance and of hypertension than the systolic pressure. A sustained diastolic pressure of 105 to 110 or above signifies hypertension, irrespective of the height of the systolic pressure. The diastolic is less influenced by physiologic factors than the systolic pressure. In arterial hypertension incident to myocardial and valvular lesions, the pulse pressure and heart-load are increased as a rule, the overload factor averaging 46 per cent. in the twenty-four patients of the cardiac hypertension group.

In the cerebral hypertension group the diastolic pressure is persistently high, from 120 to 160. This group comprises the nephritic cases, so-called, with symptoms of polyuria, albumin, casts and edema. The pulse pressure is not so greatly increased, as a rule, and the heart-load percentage is within normal limits of 40 to 60 per cent. The term cardiorenal disease applied to patients with cardiac manifestations in nephritis, Stone says, is a misnomer. Cardiac symptoms are many times present in such cases but the manifestations and terminal events of vascular disease associated with disturbed renal function are more cerebral than cardiac. If any compound name is applied descriptive of the condition, the term cerebrorenal would be more

approximate. The term vascular disease, however, covers the ground more completely. In acute circulatory failure due to shock, including hemorrhage, in an individual with a strong acting heart, the diastolic pressure is decreased, while the pulse pressure is increased, since the heart is exerting all its force in an endeavor adequately to supply the periphery with blood. In circulatory failure due to cardiac dilatation or myocardial degeneration incident to acute or long continued illness, the systolic pressure falls and tends to approximate the diastolic pressure, with the result that the pulse pressure is decreased.

In acute infections a sustained pulse pressure warrants a more favorable prognosis, as a rule, than a low pulse pressure, other things being equal, although the change from normal to low pulse pressure in circulatory failure may occur rapidly. As a rule, the lower the pulse pressure, the greater the danger of circulatory failure. Measures directed to the reduction of blood pressure by diet, habits, venesection and vasodilators are usually indicated in the cerebral hypertension group because of the high diastolic pressure, but are rarely indicated in the cardiac hypertension group. The high systolic pressures in the cardiac hypertension group are compensatory measures and rest; digitalis, strophanthin, camphor or caffein are indicated when the heart muscle shows signs of fatigue.

33. **Resistance of Red Blood Cells.**—Hill found that the resistance of normal blood to hemolysis by hypotonic salt solution is fairly constant. The figures for pernicious anemia and for secondary anemia are practically the same. In any given case of anemia, whether primary or secondary, the resistance may be high, normal or low; there is no such constant finding as there is in normal blood. In general, in both pernicious and secondary anemia, hemolysis is likely to begin sooner and end later than it does in normal blood. The hemoglobin content of the cell seems to bear no relation to its resistance. Arsenic definitely increases the resistance of the red cells and tends to inhibit hemolysis. Splenectomy increases the maximal resistance; it may decrease the minimal resistance.

34. **Case of Auricular Flutter.**—Auricular flutter was observed by Levine and Frothingham twice in a man with organic disease of the aortic valve consisting in stenosis and slight regurgitation. Opportunity was given to study him during and between attacks by means of the electrocardiograph and also by tracings from the jugular vein and brachial artery, taken simultaneously with the electrocardiogram. In this man the auricular rate during flutter varied at different times from 350.5 per minute to 324.7 per minute. The ventricles were beating most of the time during the attacks at half that rate showing a 2:1 block. During the attack of flutter the auricles were practically independent of vagus control, although a slight effect on the auricular rate could be produced by deep breathing. The ventricles could be inhibited by pressure on either the right or left eye, but the auricles could not be inhibited. During the attack of flutter there was slight pulsus alternans as shown in both the electrocardiogram and brachial tracings. This disappeared when the heart returned to its normal rhythm. Roentgenograms showed no appreciable difference in the outline of the heart during the attack, and the pulse pressure, which was small normally in this case, diminished during flutter.

36. **Effect of Carbon Dioxid on Patients with Cardiac Disease.**—Experiments are described by Peabody in which normal subjects and patients with cardiac or cardiorenal disease have breathed air containing increasing amounts of carbon dioxid. The inspired air was analyzed for its carbon dioxid content, and the total ventilation of the subject per minute was measured at frequent intervals. Thus the increase in ventilation caused by a given rise of carbon dioxid in the inspired air could easily be determined. It was found that normal persons respond to carbon dioxid in a fairly constant manner, and that their total ventilation is doubled when the carbon dioxid is between 4.2 and 5.4 per cent. Cardiac and cardiorenal patients whose circulation is compensated, and who have no evidence of an acidosis as shown by the carbon dioxid tension of the alveolar air, behave in an exactly similar manner. Cases, however, with decompensation and with a grade of acidosis sufficient to lower the alveolar carbon dioxid tension react much more quickly to carbon dioxid, and may double their ventilation when the carbon dioxid is only 2 to 3 per cent. of the inspired air. Dyspnea is therefore much more easily produced in the patients with acidosis than in those without acidosis. That the increased sensitiveness to carbon dioxid does in fact depend on the acidosis was especially clearly demonstrated in two cases. Although the results reported relate only to the dyspnea caused by the inspiration of air containing carbon dioxid, Peabody believes it is wholly logical to assume that the same effect would be produced by acids which entered the blood stream from the body cells. The presence of an acidosis would thus render the organism more sensitive to the carbon dioxid or other acids formed during muscular work, and the amount of muscular work sufficient to cause dyspnea would be less than under normal conditions.

37. **Poisoning by Mercuric Chlorid and Its Treatment.**—The treatment, as it is formulated by Lambert and Patterson, for cases coming under observation early, is as follows: The first indication is to give the patient the whites of several eggs and then wash out the stomach thoroughly. This has usually been done before the patients are admitted to the hospital. On admission, the stomach contents are expressed and examined for mercury, the stomach is thoroughly washed and a pint of milk introduced. If no stomach contents are obtained before lavage, then the lavage water is examined for mercury. Urine passed spontaneously, or that obtained by catheter, is examined for mercury. The metal appears in the urine in from three to twenty-four hours after it has been swallowed. If more than a day has elapsed since the poisoning occurred, a stool should also be examined for the poison. If the first lavage does not allay the nausea and vomiting, it is repeated after an hour, and the following routine is begun as soon as the stomach will permit: 1. The patient is given every other hour 8 ounces of the following mixture: Potassium bitartrate, 1 dram; sugar, 1 dram; lactose, one-half ounce; lemon juice, 1 ounce; boiled water, 16 ounces. Eight ounces of milk are administered every alternate hour. 2. The drop method of rectal irrigation with a solution of potassium acetate, a dram to the pint, is given continuously. The amounts of urine secreted under this treatment are very large. In Case 8, 269 ounces were passed in twenty-four hours on the fourteenth day of treatment. 3. The stomach is washed out twice daily. 4. The colon is irrigated twice daily, in order to wash out whatever poison has been eliminated in that way. 5. The patient is given a daily sweat in a hot pack.

The authors emphasize the necessity of keeping up the treatment with the colonic drip enteroclysis day and night without interruption. In cases in which one single dose has been taken, after two negative examinations of the urine, on successive days, it seems legitimate to stop the treatment. For the less severe cases, a week may be a sufficient time for treatment. When large or successive doses have been taken, or when there is a preexisting kidney lesion, or when treatment begins several days after the poison is taken, longer periods of treatment, up to three weeks, are necessary.

38. **Coagulation Test for Syphilis.**—Cole and Chiu tested fifty-one specimens of spinal fluids from different patients. In quite a few cases the Wassermann has given negative results while the coagulation test has been positive; in fact, of the fifty-one cases, the coagulation test gives eleven more positive than the Wassermann, making a difference of 21 per cent. more positives for the coagulation test. The authors believe that the spinal fluid, inactivated at 58 C. (136.4 F.) for half an hour and used in dose of 0.4 c.c., gives good results with this test.

Boston Medical and Surgical Journal

November 18, CLXXIII, No. 21, pp. 759-794

39 Midwife Problem. A. K. Paine, Boston.

40 Pregnancy Clinic and Midwife; Comparison. J. L. Huntington, Boston.

41 *Clinical Records in Relation to Teaching and Research; Plan to Promote Conservation and Utilization of Material. E. S. Kilgore, San Francisco.
42 Nomenclature and Classification of Diseases in Use in University of California Hospital. J. L. Whitney, San Francisco.
43 *Gummatous Cervical Adenitis; Its Relation to and Mistaken Diagnosis for Tuberculous Cervical Adenitis. W. P. Coues, Boston.
44 Local Anesthesia in Radical Cure of Hernia. A. Ehrenfried, Boston.
45 Elimination of Voice Defects Following Adenoid and Tonsil Operations. W. B. Swift, Boston.

41. **Completeness and Accuracy of Clinical Records.**—Experiences are reported by Kilgore in the cooperation of a university hospital, medical school and training school for nurses to promote accuracy and completeness of clinical records. To the same end of recording certain data. In addition to the usual diagnosis index (which should be made to include many more of the secondary diagnoses), a plan is described for indexing many clinical facts which cannot be included among the diagnoses.

43. **Diagnosis for Tuberculous Cervical Adenitis.**—Coues urges that cases of cervical adenitis supposed to be tuberculous, yet not quite characteristic, should be regarded as possibly gummatous, and careful study should be made to prove or disprove this supposition definitely. The clinician must fall back on consideration of the case with an exhaustive history pertaining to possible syphilis, to arrive at a correct diagnosis.

Bulletin of Lying-In Hospital of City of New York

September, X, No. 2, pp. 79-130

46 Extraperitoneal Cesarean Section; Report of Three Cases. J. W. Markoe, New York.
47 Report of Work of First Division of Hospital. M. K. Smith, New York.
48 Fissure-Fracture of Vault of Skull in Newborn. E. D. Truesdell, New York.
49 *Practical Experience with Obstetric Chair. J. W. Markoe, New York.
50 Three Cases of Congenital Anomaly of Kidney. J. R. Losee, Brooklyn.
51 Hygiene of Pregnancy. G. W. Kosmak, New York.
52 Case of Primary Carcinoma of Appendix. J. W. Markoe, New York.

49. **Experience with Obstetric Chair.**—Markoe's experience with his obstetric chair has been favorable in more than 10 per cent. of the cases; labor lasted only one hour or less after the patient was put in the chair. In one case apparently fifteen minutes sufficed, though here the cervix was four fingers dilated at the time, while in three cases in which the cervix was only two or three fingers dilated, from thirty to forty-five minutes was required. In eleven cases in which conditions anatomically might have necessitated operative interference, spontaneous delivery occurred; in other words, in 33.3 per cent. of the cases the obstetric chair apparently obviated the necessity of any other artificial aid. Of these eleven patients, eight were in the first stage of labor and three in the second stage. In two cases the patient was kept in the chair for five and six hours, respectively, while in another one hour sufficed to effect delivery, in five cases, two hours and in three cases three hours were necessary for spontaneous delivery. The average duration of the entire labor in these cases were twenty-two and one-half hours, while the average time in the chair was three and-one-third hours. Of the seven multiparas with normal pelves, all were delivered spontaneously, the average time in the chair being two and one-half hours. Of six multiparas with abnormal pelves, in only one case of those spontaneously delivered was the patient in the chair for more than two hours.

Georgia Medical Association Journal, Augusta

November, V, No. 7, pp. 149-170

53 Tumor Formations of Unusual Interest. E. C. Davis, Atlanta.
54 Principles and Practice in Treatment of Cancer. M. B. Hutchins, Atlanta.
55 Uncertainty of Roentgen Ray Shadows of Lungs in Tuberculosis. A. Elkin, Atlanta.
56 Spinal Anesthesia in Surgery; Report of Nine Hundred and Twenty-Seven Cases. G. Y. Massenburg, Macon.
57 Probable Cause and Logical Treatment of Epilepsy. J. C. Pate, Valdosta.
58 Preventive Treatment of Pellagra by Injections of Bad Maize Extracts. H. F. Harris, Atlanta.

Journal of Biologic Chemistry, Baltimore

November, XXIII, No. 1, pp. 1-411

59 Biochemistry of Iodin. Distribution of Iodin in Plant and Animal Tissues. A. T. Cameron, Manitoba, Canada.
60 Influence of Electrolytes on Diffusion of Potassium Out of Cell and Into Cell. J. Loeb and M. Cattell, New York.
61 Measurement of Toxicity. W. J. V. Osterhout, Cambridge, England.
62 Synthesis of Normal Tridecylic and Tetracosanic Acids. P. A. Levene, C. J. West, C. H. Allen and J. van der Scheer, New York.
63 *Metabolic Relationship of Proteins to Glucose. Glucose Formation from Human Proteins. N. W. Janney and N. R. Blatherwick, New York.
64 *Determination of Reducing Sugars. Volumetric Method for Determining Cuprous Oxid Without Removal from Fehling's Solution. F. M. Scales, Washington, D. C.
65 *Acid-Base Equilibria in Blood After Parathyroidectomy. D. W. Wilson, T. Stearns and M. DeG. Thurlow, Baltimore.
66 *Excretion of Acids and Ammonia After Parathyroidectomy. D. W. Wilson, T. Stearns and J. H. Janney, Jr., Baltimore.
67 Rôle of Electrolytes in Diffusion of Acid Into Egg of Fundulus. J. Loeb, New York.
68 Relation Between Configuration and Rotation of Epimeric Monocarboxylic Sugar Acids. P. A. Levene, New York.
69 *Effect of Ingested Purins on Uric Acid Content of Blood. W. Denis, Boston.
70 Apparent Change of Osmotic Pressure of Cell Contents with Osmotic Pressure of Surrounding Solution. J. Loeb and H. Wasteneys, New York.
71 Salicylates. Methods for Quantitative Recovery of Salicyl from Urine and Other Body Fluids. T. W. Thoburn and P. J. Hanzlik, Cleveland.
72 Nature of Dietary Deficiencies of Rice. E. V. McCollum and M. Davis, Madison, Wis.
73 *Essential Factors in Diet During Growth. E. V. McCollum and M. Davis, Madison, Wis.
74 *Cause of Loss of Nutritive Efficiency of Heated Milk. E. V. McCollum and M. Davis, Madison, Wis.
75 Effective Apparatus for Evaporating Aqueous Extracts by Means of Current of Air. T. B. Aldrich, Detroit.
76 Xanthophyll, Principal Natural Yellow Pigment of Egg Yolk, Body Fat, and Blood Serum of Hen. L. S. Palmer, Columbia, Mo.
77 Behavior of Some Hydantoin Derivatives in Metabolism. H. B. Lewis, Philadelphia.
78 Complex Carbohydrates and Forms of Sulphur in Marine Algae of Pacific Coast. D. R. Hoagland and L. L. Lieb, Berkeley, Calif.
79 Experiments on Fate of Ingested Sodium Nucleate in Human Subject. M. H. Givens and A. Hunter, Ithaca, N. Y.
80 Determination of Ammonia Nitrogen in Steer's Urine. D. C. Cochrane, Washington, D. C.
81 Studies on Blood Fat. Fat Absorption and Blood Lipoids. W. R. Bloor, Boston.
82 Configuration of Some of Higher Monosaccharids. G. Peirce.
83 Relative to Total Nitrogen and a-Amino Nitrogen Content of Pepsins of Different Strengths. T. B. Aldrich, Detroit.
84 Identity of Proteins Extracted from Wheat Flour by Usual Solvents. C. H. Bailey and M. J. Blish, St. Paul, Minn.
85 Effects of Certain Electrolytes and Lipoid Solvents on Osmotic Pressures and Viscosities of Lecithin Suspensions. A. Thomas, Worcester, Mass.
86 *Abderhalden Reaction. D. D. Van Slyke, M. Vinograd-Villchur and J. R. Losee, New York.
87 Micromethod for Gasometric Determination of Aliphatic Amino Nitrogen. D. D. Van Slyke, New York.

63. **Metabolic Relationship of Proteins to Glucose.**—The authors state that the ratio 3.60:1 may be accepted as representing the relation between the nitrogen contained in human muscle protein and the glucose originating from the same in metabolism. It may on these grounds be properly concluded that the proteins of the human organism collectively may yield a maximum of about 58 per cent. of glucose in diabetic metabolism. In the fasting human diabetic the severest type, when glycogen and possible sources of glucose other than protein are exhausted, the urinary G:N ratio of 3.4:1 may therefore be accepted as an average value.

64. **Reducing Sugars.**—A new volumetric method is described by Scales for the determination of cuprous oxid in Fehling's solution. The cuprous oxid without filtration from the solution is converted into cuprous chlorid and then pipetted into a known quantity of a dilute iodin solution. The iodin which is not reduced is then titrated with sodium thiosulphate solution. The data indicate that the method will

give results as accurate as those obtained with the gravimetric method. Dextrose, maltose, lactose, invert sugar and no doubt other reducing sugars may be estimated by this procedure. This method yields results in one quarter of the time required to obtain them by the gravimetric method. The method may also be used for the quantitative determination of copper.

65. **Acid-Base Equilibria.**—According to Wilson, Stearns and Thurlow, after parathyroidectomy a condition of alkalosis may develop which is neutralized by acid products formed by the muscular activity incident to tetany. An acidosis condition may result after periods of acute tetany. Periodic variations in the "nonvolatile" acid-base equilibrium seem to accompany the periodic attacks. The acidosis condition resulting from acute tetany or the injection of acid is associated with relief from tetany. Calcium salts, when injected into animals in tetany, lower the value of the dissociation constant of oxyhemoglobin and the alveolar CO_2 pressure, an effect similar to that brought about by the introduction of acids. The above conclusions were reached from a study of the variations of the values of the dissociation constant of oxyhemoglobin, the alveolar CO_2 pressure and the hydrogen-ion concentration of the blood from dogs subjected to parathyroidectomy.

66. **Excretion of Acids.**—After parathyroidectomy in dogs, there is usually a sudden diminution in the excretion of acids and ammonia and a decrease in the ammonia ratio and the hydrogen-ion concentration of the urine. With the development of tetany, the elimination of acids and ammonia increases, accompanied by increased values of the ammonia ratio and the hydrogen-ion concentration of the urine. These variations the authors believe may indicate that an alkalosis condition results after parathyroidectomy, but is neutralized by the tetany which develops. After acute or chronic tetany, an acidosis may occur.

69. **Ingested Purins and Uric Acid of Blood.**—Results are presented by Denis showing the effect of purin free and of high purin diets on the uric acid content of the blood of normal men and of persons suffering from various chronic diseases. In normal men no increase in the circulating uric acid is produced by the ingestion of large quantities of purin. In persons suffering from renal insufficiency a more or less marked increase in the uric acid content of the blood is produced by high purin feeding. It is, therefore, concluded that when the determination of uric acid in the blood is undertaken as a diagnostic test the insistence on a preliminary period during which no purin-containing foods are consumed is unnecessary except in cases in which kidney insufficiency exists, or perhaps in the case of persons who habitually consume extremely large quantities of purin-containing foods.

73. **Essential Factors in Diet.**—McCollum and Davis conclude that certain at present unidentified substances aside from protein, carbohydrates, fats and salts are indispensable for growth or prolonged maintenance, and furthermore, that there is a class of such accessories soluble in fats and another soluble in water and alcohol. From the data available it seems highly probable that, while the amount of accessory substances of either of these classes which is required to induce growth is small, the evidence points to the belief that a certain quantity must be present before any growth can take place, and that above this amount growth seems to be in some measure proportional to the amount of accessories present. It is obvious that in the study of the relative values of isolated proteins fed with mixtures of purified food substances comparable amounts of these two classes of accessories must be supplied. Otherwise no safe interpretation can be put on the results.

74. **Loss of Efficiency of Milk.**—McCollum and Davis found that skim milk powder which has been wet and long heated in a double boiler or heated for a period of one hour in an autoclave at 15 pounds pressure, no longer supports growth as does the unheated product. When heated, milk powder also loses its property of supplementing certain rations made up of polished rice, plus salts and butter fat; namely, rations which require both protein and water-soluble, accessory to make them support growth. Wheat embryo, which is as efficient as milk powder in supplementing such rice rations, can be heated for one hour in an autoclave at 15 pounds pressure without manifesting any deterioration in this respect as does milk. Skim milk from which the casein has been removed (whey) can be heated in an autoclave at 15 pounds pressure for one hour without noticeable loss of its nutritive properties. It still supplies the water-soluble accessory in active form. Whey from which the albumin has been removed by coagulation can be kept at the boiling temperature for six hours without any appreciable loss in its activity so far as the water-soluble accessory is concerned. Also lactose which has been heated in an autoclave for one hour at 15 pounds pressure, still behaves as does the unheated product in supplying to rations the water-soluble accessory. Heating casein in a moist condition for one hour in an autoclave at 15 pounds pressure destroys its biologic value as a complete protein. Heated casein or heated milk powder are shown to have little if any toxicity. The deterioration is due to a loss of value of the protein fraction of the ration through changes wrought in the casein.

86. **Abderhalden Reaction.**—In the experiments recorded by the authors practically every serum, whether from a pregnant or a nonpregnant individual, showed protein digestion when incubated with placenta tissue prepared according to Abderhalden. The range of individual variation in proteolytic activity was wide. The range covered by most of the normal serum was, however, identical with that covered by the majority of the pregnant serums. There is a tendency for the results from the pregnant serums to average somewhat higher than those from the nonpregnant. The difference, even in the averages, is not great, however; and the individual variations of both pregnant and nonpregnant serums make the results from both overlap so completely as to render the reaction, even with quantitative technic, absolutely indecisive for either positive or negative diagnosis of pregnancy. Further evidence of nonspecificity is seen in the fact that carcinoma tissue was digested to about the same extent as was placenta. It appears that nearly all human serums can digest certain coagulated tissue proteins to some extent, but that the source and significance of the proteolytic agents, and the influences that cause their fluctuation, remain undetermined.

Journal of Outdoor Life, New York

November, XII, No. 11, pp. 341-370

88 Four Essentials of Sanatorium Treatment. S. Coolidge, Middleborough, Mass.
89 Arrows of Sun. E. Cummings, Hinton, W. Va.
90 Two Morality Interludes for Children. G. M. P. Baird, Pittsburgh.
91 Method of Dealing with Tuberculosis in Public Schools of Toronto, Canada. F. S. Minns, Toronto, Canada.

Kentucky Medical Journal, Bowling Green

November, XIII, No. 12, pp. 507-582

92 Legal Status of Physician and Surgeon. F. Forcht, Jr., Louisville.
93 Relation of Physicians to Public; to Each Other and to Patient. J. W. Kincaid, Catlettsburg.
94 Plea for Uniformity of Treatment in Undoubtedly Surgical Diseases. J. G. Gaither, Hopkinsville.
95 *Pneumonia in Children. J. Martin, Cynthiana.
96 *Lobar Pneumonia. B. W. Wright, Bowling Green.
97 Blood Pressure in Diseases of Eye, Ear, Nose and Throat. J. H. Thorpe, Owensboro.
98 Hip Joint Disease. W. L. Mosby, Bardwell.
99 Puerperal Eclampsia. W. H. Strother, Owensboro.
100 Case of Cholelithiasis Simulating Gastric Ulcer. C. C. Turner, Glasgow.
101 Why We Should Attend County Medical Meeting. E. G. Thomas, Benton.
102 Significance of Albumen in Urine. J. T. Dixon, Owensboro.

95 and 96. Abstracted in The Journal, October 16, p. 1397.

Lancet-Clinic, Cincinnati

November 13, CXIV, No. 20, pp. 425-444

103 Physician; His Profession. E. O. Smith, Cincinnati.
104 Some Medical Problems. F. T. Murphy, St. Louis.
105 Conditions of Efficient Research in Dementia Praecox. B. Holmes, Chicago.

Medical Record, New York

November 20, LXXXVIII, No. 21, pp. 857-902

106 *Prognosis in Cardiovascular Diseases. T. E. Satterthwaite, New York.
107 Clinical Psychology in Its Relation to School and to Social Medicine. J. V. Haberman, New York.
108 *Significance of Presence of Acid-Fast Bacilli in Feces of Patients Suffering from Joint Disease. H. Keller and A. J. Moravek, New York.
109 Symptomatic Psychosis of Renal Type; Report of Two Cases. E. S. Brodsky, Westport, Conn.
110 Subdeltoid Bursitis; Report of Cases. S. Kleinberg, New York.
111 Inebriate Hospitals; Historical Note. T. D. Crothers, Hartford, Conn.

106. **Prognosis in Cardiovascular Diseases.**—Satterthwaite emphasizes the fact that no matter what the nature, location and extent of a valvular disease, the prognosis does not depend so much on the valve affection itself as on the condition of the myocardium. Complications must be taken into account. Among the most important considerations are the station in life occupied by the patient, his temperament, his occupation and his environment. The method of treatment has an important bearing on the prognosis. Blood pressure has much to do with the prognosis. A high blood pressure is a bad sign, even in the absence of interstitial nephritis. When the high pressure can be relieved by an appropriate dietary, laxatives and suitable medication, the danger to life is lessened, but even if the pressure has been reduced to the standard for the individual, it is still not a guarantee against arterial hemorrhage, though the expectation of life is improved. In all persons subject to high pressure, there is especial danger of cerebral hemorrhage or heart failure; for, even if the coronary arteries are not involved, increased pressure indicates that the heart is doing more than its normal quantum of work. So far as interstitial nephritis is concerned, Satterthwaite says, it need not necessarily be a bugbear. The most important sign of the approaching end is cardiac weakness that cannot be controlled by ordinary dosage with the group of remedies of which digitalis is the chief. The conditions of the arterial system must always be taken into account in making a prognosis.

108. **Presence of Acid-Fast Bacilli in Feces.**—As a result of their experimental and clinical investigation lasting over a year, Keller and Moravek believe (1) that the acid-fast bacillus found in the feces resisting the decolorization with 25 per cent. nitric acid, water solution, followed by alcohol (80 per cent.), is a tubercle bacillus and nothing else; (2) that the same acid-fast bacillus is viable, able to grow on culture media, and (3) that when those cultures are injected into guinea-pigs they produce tuberculosis. The result of this investigation was as follows: Active tuberculosis of joints, 42; tubercle bacilli in feces, 30; tubercle bacilli in urine, 2. Cured cases of joint tuberculosis, 6; tubercle bacilli in feces, 0; tubercle bacilli in urine, 0. Dubious cases of joint tuberculosis, 9; tubercle bacilli in feces, 1; tubercle bacilli in urine, 0. Of the dubious cases 3 turned out to be luetic infections; 1 was found to be suffering from a gonorrheal arthritis; 1 was shown to be an ordinary sprain of the knee joint; 2 cases are still doubtful; 1 case was lost sight of. The patient in whose feces acid-fast bacilli were found turned out to be suffering from tuberculous (active) arthritis of right hip. Control cases, 18; tubercle bacilli in feces, 0; tubercle bacilli in urine, 0. The above figures show that under normal conditions there are no acid-fast bacilli in the feces, also that only in active cases of joint disease are they present in the alvine discharges, and not in cured cases, and therefore the finding of the acid-fast bacilli in the feces in cases suffering from an active disease of a joint, and no active tuberculosis of any other part of the body, is of great significance in reaching a diagnosis in an obscure case.

New Jersey Medical Society Journal, Orange

November, XII, No. 11, pp. 533-584

112 Bone Grafting and Arthroplasty. G. H. Sexsmith, Bayonne.
113 Epilepsy with Special Reference to Heredity. D. F. Weeks, Skillman.
114 Institutional Care of Epileptics. D. S. Renner, Skillman.
115 Palinphrasia in Epilepsy; Report of Cases. L. F. Robinson, Skillman.
116 Difficulties Attending Treatment of Fractures in Epileptic. H. M. Chandler, Skillman.
117 What Dentistry Means to Epileptic. R. D. Ribble, Skillman.
118 What Field Worker Does and What She Finds. D. L. F. Brown, Skillman.

New York Medical Journal

November 20, CII, No. 21, pp. 1025-1072

119 Study of Drug Action. T. J. Mays, Philadelphia.
120 Lymphatic Obstruction. A. L. Benedict, Buffalo.
121 Parapsoriasis. F. Wise, New York.
122 Case of Kerion Complicated by an Abscess. J. Grossman, New York.
123 Artful Acarus. W. P. Cunningham, New York.
124 Proliferating Tuberculous Cystitis; Report of Three Cases. M. Laverrière, Lyons, France.
125 Chronic Urethritis, Gonorrheal and Postgonorrheal. A. Strachstein, New York.
126 Case of Acute Otitis Media in Seventeen Months Old Child. C. H. Smith, New York.
127 Potassium Permanganate in Examination of Cerebrospinal Fluid. A. I. Rubenstone, Philadelphia.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

October 30, II, No. 2861, pp. 629-664

1 Wound Infections and Their Treatment. (To be continued.) A. E. Wright.
2 Functional Murmurs and Irregularities of Heart. J. F. Goodhart.
3 Reeruit's Heart. A. Morison.
4 *Effect of Exertion on Circulation. J. M. Macphail.
5 *Rapidity of Pulse Dependent on Persistent Disturbance of Vasomotor Mechanism. K. Boney.
6 Escape of Ventricle, in Association with Cerebrospinal Fever. J. D. Windle.
7 Successful Early Operation in Wound of Small Intestine. J. H. Stephen.
8 Some Cases of Head Wounds. H. H. Taylor.
9 Manufacture of Aseptic Hospital Furniture. J. L. Stretton.

4. **Effect of Exertion on Circulation.**—Exertion, according to Macphail, causes a rise in systolic pulse pressure, though a general vasodilatation may nullify this effect. There is always a lowering of diastolic pressure. In heart disease with failing compensation the fall in diastolic pressure is most pronounced; and there is often an almost complete absence of the predicrotic wave, pointing to a diminished systolic pulse pressure.

5. **Rapidity of Pulse.**—Twenty patients examined by Boney when first seen all presented the same general characters—a tired, listless expression, fatigue on walking a few yards or after a few simple exercises, and in one or two cases undue shortness of breath after any such slight exertion. In no case was any complaint made of pain, palpitation, or other subjective symptom. With possibly one exception there was no evidence of dilatation of the heart in any of them. None presented signs of hypertrophy. In every patient the position of the apex beat was within the nipple line. The cardiac impulse was not forcible or heaving, in fact, in some cases it was so weak as to be difficult of localization. The heart sounds were normal in character and correctly spaced. Accentuation of the pulmonary second sound was absent and no reduplication was observed. No form of irregularity was present.

With regard to the character of the pulse, in every patient except one the rate was normal while lying down. The volume was good, and no irregularity in rate or force could be detected by the finger. The tone of the vessel wall appeared good, but as a certain number of them showed thickening of the vessel wall (in five of them it was marked, although no cardiac hypertrophy was present) it is difficult to generalize about this. Blood pressure in the radial measured by a Riva-Rocci manometer varied from 120 mm. to 140 mm. Hg. In no case was there any dicrotism. On slowly assuming the erect position, in six patients only did the pulse keep within what was considered normal limits. In the remaining fourteen the rate was enormously increased, in some cases going up to 130 or even 140—in one case to 156. In the six cases to which exception was made on standing up

the rate was increased by 15 to 25 beats a minute. There was a trace of albumin in one specimen of urine only. Other evidence of vasomotor instability was to be found in various circulatory disturbances exhibited in some cases. Cold hands and feet, even when warmly wrapped up in bed, were commonly noted, and in two patients flushing of the face was so marked as to be spontaneously remarked on by an independent observer. A "tache" could be obtained in two cases. Boney believes that everything points to a central lesion of the controlling nervous mechanism.

Edinburgh Medical Journal

November, XV, No. 5, pp. 305-384

10 Dangers of Artificial Pneumothorax. H. de C. Woodcock.
11 Roentgenography of Thorax in Children. J. S. Fowler.
12 Analysis of Sixteen Cases of Chorea and Motor Tic. J. E. Middlemiss.
13 Case of Congenital Desmoid Tumor of Rectus Sheath in Infant. D. M. Greig.
14 Two Cases with Multiple Intracranial Complications of Chronic Suppurative Otitis Media; Recovery After Operation. J. S. Fraser and W. R. Logan.

Indian Medical Gazette, Calcutta

October, L, No. 10, pp. 361-400

15 Report of Lady Hardinge Hospital, Brockenhurst, England. January 20 to June 15, 1915. F. F. Perry.
16 St. John Ambulance Association. O. St. John Moses.
17 Treatment of Kala-Azar by Tartar Emetic Intravenously and Inunctions of Metallic Antimony. L. Rogers.
18 Treatment of Kala-Azar with Tartar Emetic. E. Muir.
19 Outbreaks of Epidemic Dropsy in Mofussil. S. L. Sarkar.
20 Cholera Experiences. R. Bryson.
21 New Method of Gastro-Enterostomy. D. John.
22 Case of Hydrophobia with Incubation of One Year. K. K. Das.

Lancet, London

November 6, II, No. 4810, pp. 1009-1062

23 Wound Infections and Their Treatment. (To be continued.) A. E. Wright.
24 Nervous Affections of Sixth and Seventh Decades of Life. (To be continued.) J. M. Clarke.
25 *Experiences in Operative Treatment of Gunshot Injuries of Nerves. F. Eve and R. S. Woods.
26 *General Surgery of Gunshot Wounds of Nerves. W. Trotter.
27 Cavernous Angeioma in Wall of Left Auricle. R. F. Manifold.
28 Case of Optic Neuritis Following on "Gassing." G. Finch.
29 Experiences in Serbia, 1914 to 1915. J. T. J. Morrison.

25. **Operative Treatment of Gunshot Injuries of Nerves.**—Twenty-eight patients were operated on by Eve of which twenty-one were due to bullet and six to shrapnel or shell wounds. As regards the distribution of the lesions, five were injuries of the brachial plexus, eight of the musculospiral nerve, one of the posterior interosseous nerve, five of the ulnar, two of the median and ulner nerves together, and seven of the sciatic or external and internal popliteal nerves. In six cases the injured nerve or nerves were completely divided. The sciatic nerve was divided three times; the other nerves divided were the median and ulnar together in one case, and the musculospiral and posterior interosseus once each. In one instance the sciatic nerve was perforated with incomplete division of the external popliteal portion. The period elapsing between the receipt of the wound and the operation was often considerable. This period in all but four cases was three months or over; of the remainder, the shortest period was seven weeks. In the absence of evidence of improvement, and if the electrical reactions indicate a severe injury of the nerve, the authors are of the opinion that an operation should be performed as soon as the condition of the wound permits of its being carried out aseptically.

The chief point in the operative treatment of these nerve lesions is to determine whether simply to separate the injured nerve from the surrounding tissues or to resect it, and this is of greater importance owing to the fact that anatomic division is comparatively rare. In cases in which doubt exists as to the advisability of resection, an indication of the amount of damage may be sometimes furnished by blunt dissection of the nerve bundles from above into the cicatrix, to ascertain if they are continuous across it.

26. **Surgery of Gunshot Wounds of Nerves.**—So far as experience seems to show us at present the most important points in the technic of nerve resection, Trotter says, are free excision, exact coaptation, careful insulation, and perfect asepsis. Muscular relaxation before and after the operation is, perhaps, equally important.

Practitioner, London

September, XCV, No. 3, pp. 281-448

30 Value of University Training as Professional Asset. T. C. Allbutt.
31 How Is Medicine as Profession for Women Affected by War? J. Walker.
32 Professional Secrecy. W. A. Brend.

November, XCV, No. 5, pp. 589-728

33 An Appeal for More Extended Use of Whole Milk in Artificial Feeding of Infants. C. W. Vining.
34 *Gastric Roentgenoscopy in Children. L. Willox.
35 Recent Work in Diseases of Lungs. A. J. Jex-Blake.
36 Cerebrospinal Fever. T. H. C. Benians.
37 *New Operation for Relief of Pruritus Ani. I. Back.
38 Practical Hints on Removal of Tonsils and Adenoids. D. Guthrie.
39 Value of Blood Examination in Acute Disease. J. F. Rey.
40 Some Practical Hints on Removal of Superfluous Hair by Electrolysis. L. W. Bathurst.
41 Tragedy of Glycosuria. K. Robertson.
42 The Thyroid. H. R. Unwin.
43 Three Cases of Gallstones, Rarity of Condition in Trinidad, B. W. I. R. Scheult.

34. **Gastric Roentgenoscopy in Children.**—Willox found that the shape of the stomach with contents in children is not a fixed one, but presents many differences during the process of digestion; the same stomach may show different forms at different times. As a rule, in infants the shape is more or less globular, becoming elongated as the child grows older; so that in many cases in the older children the stomach, when examined immediately after the ingestion of a meal, is somewhat "F" shaped, and has some resemblance to a Dutchman's wooden shoe. The foodstuff of which a meal is composed does not in itself seem to have much, if any, effect on gastric motility. The important thing is the degree of fluidity of the meal; the more fluid a meal is, the more quickly it will pass through the stomach. The stomachs of older children empty quite as quickly, on an average, as those of younger children, if a meal similar in bulk and consistence is given. Practically as soon as the meal has been taken, while in others there seems to be a resting stage before peristalsis commences. The average time for the stomach to become empty was three and three-quarter hours, and the majority emptied in from three to four hours.

37. **Operation for Relief of Pruritus Ani.**—Back makes the same incision on each side of the anus, as in Ball's operation, but instead of dissecting up a flap he cuts down into the tissues of the ischiorectal fossa, and divides the inferior hemorrhoidal artery. One point in technic Back regards as important—to unite the cut edges with Michel's clips. Remove the clips on the fourth day; do not give a purge until the clips have been removed, in order to minimize the risk of infection of the wound.

Sei-I-Kwai Medical Journal, Tokyo

October, XXXIV, No. 10, pp. 49-52

44 Treatment of Ulcer of Stomach, Especially of Hemorrhage. Y. Miura.
45 Cure of Syphilis and Its Recurrence. K. Asahi and G. Murasawa.
46 Present Conditions of Treatment of Suppurative Meningitis. K. Kurihayashi.
47 *New Treatment of Acute Gonorrheal Epididymitis. Y. Murata.
48 Two Cases of Rat-Bite Treated by Salvarsan. Z. Oda.

47. **Treatment of Gonorrheal Epididymitis.**—Murata injected 30 gm. of calcium salt solution intravenously with success. After injection, pain disappeared and no hard induration was left behind.

Archives des Maladies du Cœur, etc., Paris

October, VIII, No. 10, pp. 517-560

49 *The Causes, Direct and Indirect, of Insufficiency of the Heart. H. Vaquez.

49. **Causes of Heart Insufficiency.**—Vaquez' long article reviews the numerous causes which may modify the circulation beyond the power of the heart to overcome, especially with preexisting organic trouble. He cites a few clinical examples to illustrate the various types described. Acute

insufficiency after extreme exertion is probably due to acute dilatation. The question whether overexertion can bring on acute dilatation is particularly important on account of legislation on workmen's compensation. It has been claimed that overexertion entailing acute dilatation merely exaggerates the phenomenon normally induced by ordinary effort. Vaquez insists, however, that this is not the case. Physical effort tends rather to reduce than to increase the size of the heart. He agrees with Raab that dilatation following physical exertion occurs only when the resisting power of the heart has been weakened by preceding infection or intoxication or an organic lesion. When angina pectoris develops suddenly after exertion, or cardiac insufficiency such as Da Costa observed in young soldiers of the Civil War, or exhaustion of contractility such as Münziger discovered in woodchoppers, syphilis or the strain of a military campaign or excessive beer drinking can usually be incriminated. Organic lesions in the left heart are particularly liable to acute insufficiency. He recently witnessed acute pulmonary edema develop in a young physician with a lesion of the aorta, perfectly compensated hitherto, after violent efforts to crank his automobile.

Errors in diet are also liable to bring on acute insufficiency of the heart, but not by solid food. An overhearty meal may cause palpitations and transient discomfort, but not actual cardiac insufficiency. This, however, can be induced by drinking large amounts of fluids. This is frequently the cause of serious mishaps in persons whose kidneys are not working properly at the time. It occurs mostly with mitral lesions and during asystolia. Reduction of the intake of fluids is an important factor in the management of such cases, and is even more indispensable with generalized lesions of the arterial system or high blood pressure with renal sclerosis. The danger from drinking too much fluid is particularly serious in these cases. It may entail sudden distention of the heart. Until physicians at watering-places learned to caution their patients not to drink too much of the waters, acute pulmonary edema was of comparatively frequent occurrence among those drinking glass after glass of the waters.

Salt is liable likewise to bring on acute pulmonary edema, especially with both heart and arterial affections, as the kidneys are usually more or less impaired in these cases. With simple valvular lesions, the immoderate use of salt may bring on the cardiac insufficiency more gradually, but in time the whole picture is presented. This may occur with the patient in bed and not exposed to physical exertion. After transient exhaustion of contractility of the left ventricle conditions may right themselves and the kidney eliminate salt as in normal conditions. But unless certain of this, the intake of salt should be regulated.

Heat and cold are not borne well by persons with unduly high blood pressure. Cerebral hemorrhage and acute dilatation of the heart, with pulmonary edema, are most common and most fatal in the winter in persons with arterial hypertension. Extreme heat, Turkish baths, are liable to elicit the first manifestations of heart disease or bring on fatal aggravation. The rapid heart action under the influence of fear or anger imposes extra work on the heart, but Vaquez remarks that cases in which emotional factors alone have brought on cardiac insufficiency are quite exceptional. He reviews, further, the extracardiac affections liable to induce insufficiency on the part of the heart. In fact, he says, there is no organ that may not influence the heart in some way. Recent research has shown infiltration of fat in the region of the bundle of His in cases of permanent bradycardia, thus confirming the assumption of Adams (1827) and Stokes (1846) that fat deposits might be responsible for the pathologically slow pulse.

Archives de Médecine des Enfants, Paris

September, XVIII, No. 9, pp. 461-516

50 *Orthostatic-Lordotic Intermittent Albuminuria in Children. (L'albuminurie posturale de l'enfance.) L. Jeanneret.

51 Treatment of Tetanus by Subcutaneous Injections of Antitetanus Serum. J. Comby.

50. **Intermittent Albuminuria in Children Usually Brought on by Keeping Still.**—Jeanneret remarks that Stirling was the first to call attention to intermittent albuminuria in children in connection with the position of the body, and he styled it "postural albuminuria." Jeanneret declares that this is the best name for it, as neither the orthostatic nor the lordotic attitude ever induce it except in the predisposed. The extreme lordosis which is induced by Rollier's pillow in heliotherapy of Pott's disease was borne by children at Leysin over long periods without their developing albuminuria. Jeanneret has also examined numbers of children with spontaneous extreme lordosis and no albuminuria was observed in them at any time. In still further tests, he had all the children in the Children's Hospital at Basel lie on Rollier pillows but albuminuria was scarcely ever observed from the extreme lordosis thus induced. This was the more remarkable as the children in the hospital were all more or less debilitated. On the other hand, 20 per cent. of the children in school present intermittent albuminuria. Numerous tests were made in different cases. One child of 11 had no albumin in bed on a milk diet, none in bed on a mixed diet, none in three hours of extreme lordosis induced with the Rollier cushion, none playing in the garden, and none during half an hour standing erect but stepping from leg to leg or otherwise exercising the legs. Albumin, however, appeared in the urine in three minutes after the child stood erect in extreme lordosis and kept perfectly still. There was 1 per cent. the third minute; 2 per cent. the fifth; 3 per cent. the fifteenth, and 10 per cent. by the thirtieth minute.

Further tests confirmed the importance of the factor, keeping still, in the genesis of intermittent albuminuria, when this factor was superposed even on moderate lordosis. Of the 204 children examined, albuminuria could be induced by lordosis alone in only 3 per cent., and by a change from the seated to the erect posture (orthostatism) only in 1.3 per cent. Both together, the children not keeping still, induced albuminuria only in 1.6 per cent. But the combination of lordosis, orthostatism and muscular immobility induced more or less albuminuria in 49 per cent. The findings in the various groups are listed in detail in twelve tables. They show that the restlessness of children responds to a physiologic demand, and that children should not be expected to sit still in school. The school desk should be arranged to avoid inducing lordosis. The "negative" distance between bench and chair gave albuminuria in 34.4 per cent. of the children. He declares that the "zero distance" is the ideal for desk and bench, thus protecting against malposition of the spine and not inducing albuminuria. He explains the anatomic and physiologic conditions, with illustrations, which are liable to start the albuminuria when the normal play of muscles and the local circulation are checked in children by keeping motionless.

Bulletin de l'Académie de Médecine, Paris

October 5, LXXIV, No. 40, pp. 341-376

52 *Sodium Hypochlorite in Abortive Treatment of Infection of Wounds. Carrel, Dakin and others

53 * Mumps Plus Epidemic Meningitis. (Oreillons et méningite cérébro-spinale.) P. Sainton and J. Bosquet.

October 12, No. 41, pp. 377-428

54 Formation of Blood Corpuscles from Hematoblasts in Pigeons and Poultry. (De la formation du sang sur les cellules vasoformatives des oiseaux.) G. Hayem.

55 *Serotherapy of Acute Poliomyelitis; Thirty-Two Cases. A. Netter.

56 Suture of Completely Severed Spinal Cord. (Note sur un cas de retour partiel de la motilité volontaire survenu après suture de la moelle épinière complètement sectionnée par un éclat d'obus—intervention pratiquée 130 jours après le traumatisme.) Lortat-Jacob, E. Girou and Ferrand.

52. **Abortive Treatment of Wounds.**—This method of treating wounds has been described in these columns recently, October 2, p. 1221. The work issues from the Rockefeller Foundation laboratory and hospital at Compiègne. Carrel states that with it infected wounds were completely sterilized and could be closed like an aseptic wound. For this, however, the hypochlorite must reach every remotest crevice of the

wound. Even when this has not been realized, the infection is considerably diminished by the applications.

53. **Mumps and Meningitis.**—In the case described, the clinical picture of the mumps was unmistakable when, the seventh day, meningitis developed. It was regarded at first as merely the involvement of the meninges in the mumps process, but meningococci were cultivated from the spinal fluid and antimeningitis serum soon cured the patient. The fluid drawn by lumbar puncture was nearly clear, which seemed to confirm the assumption that the meningeal symptoms were due to the mumps. Certain cases reported as such in the literature must have been in reality cases of the combination of the two diseases.

55. **Epidemic Poliomyelitis.**—Netter devotes six pages to tabulation of the details of thirty-two cases of epidemic poliomyelitis with the modifications induced by intraspinal serotherapy. These and the return of symptoms when it was suspended too soon, demonstrate the efficacy of the measure, he reiterates.

It not only arrests the progress of the paralysis but makes it retrocede to a complete cure, as a rule, on condition that the serotherapy is applied early enough, that is, from the first to the fourth day of the paralysis. The serum was derived from persons who had had the disease within six weeks up to twenty-nine years; the average interval was five years. The serum seems to retain its specific properties for more than thirty years. He sterilizes the serum by tyndallization, and injects from 5 to 13 c.c. into the spinal canal for eight days in succession, on the average. It is better tolerated by the spinal canal than horse serum, but still it evokes an inflammatory reaction, with sometimes transient fever and pains. In his 32 cases the cure was complete and rapid in 6; improvement approximating a cure in 3; 7 were very much and 5 considerably improved. In 5 others the influence of the serum was questionable, and in 3 no modification was apparent. In 7 cases the bulb was involved and these all terminated fatally, as also one other case. It is possible that monkey serum may prove to answer for therapeutic purposes, although the disease seems to be more serious in them even than in man, and they are liable to succumb early to it.

Paris Médical

V, No. 14, pp. 245-260

57 *Potato Bread in France After the French Revolution. (Pain économique; pain de pommes de terre; pain K.) E. Maurin.
58 Autoregulating Extension Device for Compound Fracture of the Femur. L. Senlecq.
59 *Phenol Treatment of Gas Gangrene. Mencière.

Nos. 15-16, pp. 261-304

60 *Orthopedic Surgery for the Wounded. A. Mouchet.
61 Artificial Legs on the Market; Amputation of Half of the Thigh. (Etude critique des appareils français pour amputations de cuisse à la partie moyenne.) Ducroquet.
62 Open Plaster Casts with Extension. (Les appareils platrés à anses pour le traitement à l'ambulance des fractures ouvertes et arthrites suppurées.) M. Lance.
63 Peritoneum Sheath (from Herniotomies) to Isolate Nerves and Tendons. L. C. Bailleul.
64 Vocational Training for Crippled Soldiers. (De la réadaptation et de la rééducation au travail des blessés et des mutilés de la guerre.) Borne.
65 Training Crippled Soldiers to Regain Use of Their Limbs. (La rééducation des mouvements chez les blessés de guerre.) P. Kouindjy.
66 Repair of the Jaws After Mutilating Wounds of the Face and Jaws. (Prothèse restauratrice.) L. Frey.

No. 17, pp. 305-320

67 Exercises for Stiff Joints. (La mobilisation; applications au traitement des blessures de guerre.) H. Somen.
68 Fulminating Perfringens Septicemia After Small Shell Wound. Lévy, Cotte and Latarjet.
69 Minor Wounds of the Skull. (Embarrures et lésions duremériennes.) J. Fievez.
70 Heliotherapy for the Wounded. (Cure de soleil et chirurgie de Guerre.) P. E. Morhardt.

57. **Potato Bread.**—Maurin quotes from an old French work directions for making bread of half wheat and half potato flour. A very palatable bread can be made, he says, by following the directions given, baking small loaves, and using less heat than for ordinary bread. This admixture of potato was recommended for reasons of economy during the years of poverty that followed the French revolution.

59. **Phenol Treatment of Wounds.**—Mencière pours phenol freely into the wound and then rinses it out with alcohol, and is convinced that this heroic measure has saved many men in his charge not only from amputation but has saved lives as well. He has seen it arrest gas gangrene already under way, and he advocates "phenolization" as a life-saving measure when the wound is deep, soiled and of a bad aspect. The phenol works down deeper than other antiseptics. After rinsing out the phenol with alcohol, he applies an embalming mixture of 10 gm. each of iodoform, guaiacol, eucalyptol and 90 per cent. alcohol, with 30 gm. Peruvian balsam and 10 c.c. ether. He uses 9 parts phenic acid crystals dissolved by 1 part alcohol—only just enough to liquefy them. He fills the wound up with this, and with small tampons works it into all crevices. After one minute, or a minute and a half in gas gangrene, he rinses it out with alcohol, using three or four liters, and then applies the embalming fluid or the same with ten times the amounts of ether and alcohol.

60. **Orthopedic Surgery in War.**—This entire number is devoted to orthopedics and protheses for wounded soldiers and training to "uncripple the cripples," that is, to enable them to be self-supporting. Each article is profusely illustrated.

Presse Médicale, Paris

October 25, XXIII, No. 51, pp. 417-424

71 Fractures of the Lower Jaw in War; Anatomic Conditions. L. Imbert and P. Réal.
72 Gelose-Glucose-Lead Culture Medium Differentiates Typhoid and Paratyphoid A and B Bacilli. P. P. Lévy and P. Vallery-Radot.

October 28, No. 52, pp. 425-432

73 Treatment of Psychoneuroses in the Active Army. (Psychonévroses de guerre.) Grasset.
74 Early Sterilization of Wounds with Superheated Air or Oxygen. H. L. Reverchon, Vignat and Vaucher.

Berliner klinische Wochenschrift

October 25, LII, No. 43, pp. 1105-1128

75 Causes and Cure of Itching. (Entstehung und Beseitigung des Juckens.) P. G. Unna. Commenced in No. 42. Continued.
76 *The Viscosity of the Urine. C. Posner.
77 Clinical and Bacteriologic Findings in Dysentery Plus Typhoid. (Mischinfektionen von Ruhr and Typhus.) M. Soldin.
78 Infectious Diseases in the Active Army. (Meine Kriegserfahrungen über Infektionskrankheiten.) Grundmann. To be concluded.
79 Roentgen Localization of Foreign Bodies. (Zur Methodik der Fremdkörperlokalisation.) R. Fürstenau. (Erwiderung.) W. Salow.
80 Medical Aspects of War: Historical Sketch. (Historisches zur Kriegsmedizin in Frankfurt a. M.) W. Hanauer. Commenced in No. 42.
81 Legal Decisions Affecting Physicians. (Aerztliche Rechtsfragen.) H. Lieske.

76. **The Viscosity of the Urine.**—Posner remarks that it is a comparatively simple matter to determine the viscosity of the urine in comparison to examining that of the blood. Neither sugar nor albumin in the urine seems to affect its viscosity in the least, but the blood corpuscles display a marked tendency in this respect, especially the whites, and tube-casts even more than the blood cells. The viscosity increases with the concentration of urine, and measures to increase diuresis not only ward off production of concrements by rinsing out the kidney and urinary passages, but have a still further beneficial action by reducing the concentration of the urine. The benefit in lithiasis from courses of alkaline mineral waters is explained by the lowering of the viscosity of the urine under their influence.

Correspondenz-Blatt für Schweizer Aerzte, Basel

October 23, XLV, No. 43, pp. 1345-1376

82 *Extrapleural Pneumolysis, Supplemented by Injection of Paraffin; Three Cases. (3 Fälle von extrapleuraler Pneumolyse mit sofortiger Plombierung nach Baer.) F. Oeri.

82. **Pneumolysis Plus Injection of Paraffin.**—Oeri has applied in three cases of pulmonary tuberculosis Baer's method of compressing the lung by injection of paraffin. The

lung is first detached from all connection with the wall, working through the small hole made by partial resection of a rib. The pleura is separated with the lung, the pneumolysis thus being done between the costal pleura and the endothoracic fascia, over the cavity in the lung. The cavity wall is then pushed in to close it up completely and the space left between the costal pleura and the chest wall is filled in with a paraffin mixture which is still kneadable at body temperature. The incision is then sutured. The aim is practically the same as that of artificially induced pneumothorax, but the filling technic can be applied when conditions prevent effectual therapeutic pneumothorax. The operation and filling are done under local anesthesia; there is too much danger of aspiration of crushed lung tissue for general anesthesia to be used. Among the advantages are the exact dosage, the limiting of the compression directly to the cavity area, and the fact that no repeating is necessary. The experiences were all favorable in the three cases reported, and Oeri thinks that this should outweigh the theoretical objections to this technic. The three cases are described in detail, with illustrations. One patient was a delicate young woman who for four years had had an apical process with cavity, profuse expectoration, slight hemorrhage and periods of fever. Since the paraffin was injected, fifteen months ago, she has regained her earning capacity, and except for a brief set-back in the winter, has been free from fever and almost free from sputum. The second patient was a young man with signs of pulmonary tuberculosis since 1909. As the cavity was obliterated and held compressed by the paraffin, the drain on his health from the suppuration was arrested and with it the effects of toxic action, the fever and the cyanosis subsiding. Both lungs had cavities but by obliterating the one large cavity conditions were materially improved, and the lung processes have shown no progress during the twenty-one months since. In the third case, the large cavity was in the lower lobe and had not shown much if any benefit under a year's treatment in a sanatorium. The man of 27 was subject to hemorrhages, increasing in severity, with fever and much expectoration. He has now apparently regained his earning capacity and is free from all disturbances. No damage seems to have resulted from the filling in any case. In each instance an ineffectual attempt had been previously made to induce a pneumothorax.

Münchener medizinische Wochenschrift, Munich

October 19, LXII, No. 42, pp. 1417-1452

83 *Colorimeter in Quantitative Analysis. (Ueber kolorimetrische Bestimmungsmethoden: die quantitative Bestimmung von Harneiweiss. X.) W. Autenrieth and F. Mink.
84 *Roentgen Treatment of Venereal Bubo. K. Kall.
85 Slight Hematuria with Sound Kidneys Before Onset of Spasmodic Stage in Four of Five Cases of Whooping-Cough. (Befund von Erythrozyten und Erythrozytenzylindern im Harn bei Keuchhusten vor Ausbruch des spasmodischen Stadiums.) F. Kornmann.
86 Swallowed Tooth Plate Ejected under the Influence of Subcutaneous Injection of an Emetic. (2 Fälle von verschlucktem Gebiss, geheilt durch subkutane Apomorphininjektion.) Gerstein.
87 Progress in the Physics of the Roentgen Rays. A. Sommerfeld.
88 Wounds of the Skull. (Richtlinien in der Behandlung der Schadeltangentialschusse.) M. Wilms. (Ueber den zerebellaren Symptomenkomplex in seiner Bedeutung für die Beurteilung von Schädelverletzten.) K. Goldstein.
89 Heart Disturbances in Soldiers. (Die Herzkrankheiten und Herzstörungen der Soldaten im Felde.) E. Schlesinger.
90 Broad Cotton Rings Veiled with Gauze for Open Treatment of Wounds. (Offene Wundbehandlung mit Zellstoffmullringen.) Lörcher.
91 Orthopedic Appliances for the Wounded. III. (Arbeitsschiene für Radialislähmung.) A. Heymann.
92 Treatment to Loosen Up and Counteract Cicatricial Contracture. (Ueber erweichende Behandlung.) J. Frankel. Commenced in No. 41.

83. **The Colorimeter for Determination of Albumin in Urine.**—In this tenth communication on colorimetry, Autenrieth and Mink give the quantitative findings in regard to the albumin in the urine in eleven cases as tested by various technics. With the gravimeter and the colorimeter the figures were respectively 2.812 and 2.86 per thousand; 1.16 and 1.15; 3.86 and 3.88; 2.8 and 2.8; 3.22 and 3.43; 0.962 and 0.91; 0.392 and 0.35; 1.24 and 1.26; 0.424 and 0.47; 4.36 and 4.47; 2.08 and 2. These figures confirm the precision of the colorimeter technic. They give the minute details of their technic as adapted for the general practitioner. They refrain from boiling the urine directly, but heat it for five minutes in boiling water. A number of minor points are mentioned that facilitate the test.

84. **Treatment of Venereal Bubo with Roentgen Rays.**—Encouraged by the benefit from roentgenotherapy in tuberculous glandular disease, Kall has been applying it in treatment of venereal bubos during the last eighteenth months. The results have been so good that he urgently advocates this method in their systematic treatment, especially in the early stages before much inflammation has developed. The treatment is more successful before there is suppuration; the pain subsides and the patient is able to go about without disturbances of any kind from this source. Even after fluctuation has set in, the leukocytes are destroyed by the Roentgen rays and all are apparently absorbed. The fluctuation, the pain and the redness all disappear, and the infiltration gradually retrogresses, but the spot is left pigmented. Even indolent syphilitic bubos respond promptly to the Roentgen ray. Developed abscesses have to be evacuated with an incision, but the secretion ceases and the abscess heals quicker under exposures afterward. Doses of 10 or 20 X are ample for the purpose, with a 0.5 mm. aluminum filter.

Wiener klinische Wochenschrift, Vienna

September 30, XXVIII, No. 39, pp. 1049-1072

93 Experiences with Typhus. (Flecktyphus.) L. Detre.
94 *Spontaneous Agglutination of Blood Corpuscles in Malaria. (Spontane Hamagglutination.) R. Biglieri.
95 The Urochromogen Reaction a Valuable Differential Sign of Typhoid. (Die Urochromogen-Reaktion Weiss im Harne bei Typhus abdominalis.) V. Svestka.
96 Technic for Production of Bacterial Vaccine. (Bakterienimpfstoff-Herstellung.) O. Löwy.
97 *Disturbances in Micturition After Getting Chilled. (Versuch einer Analyse der Miktionsanomalien nach Erkältungen.) O. Schwarz.
98 Detection of Simulation of Deafness by Mouth-Reading Exercises. (Entlarvung von Taubheit und Schwerhörigkeit Simulierenden.) J. Kindlmann.
99 Emergency Extension Device Made from Four Guns for Fracture of Femur. (Ein transportabler Streck-Hange-Verband fur Oberschenkelschussfraktur.) H. H. Schmid.

October 7, No. 40, pp. 1073-1100

100 *Vascular Erythema. (Eine bisher nicht beschriebene Dermatose: Erythema vasculosum.) B. Lipschütz.
101 *Contusion of the Abdomen; Three Cases. N. Moro.
102 Subcutaneous Granulomas Secondary to Wounds. K. Wagner.
103 Acute Poliomyelitis in Austria. (Vorkommen der spinalen Kinderlahmung in Oberösterreich in den Jahren 1909 bis 1913.) G. Stiefler.
104 How Cholera Was Stamped Out in Three Days. (Bekämpfung der Choleraepidemie im provisorischen Kriegsgefangenenlager zu K.-S.) L. Detre.
105 Improvised Pasteboard Splint. (Eine Hohlschiene aus Pappendeckel zur Selbstanfertigung geeignet.) C. Springer.

October 12, No. 41, pp. 1101-1128

106 Bacteriologic Diagnosis of Dysentery. G. Salus.
107 "Typhus" in Galicia True Typhoid. (Zur Frage des Flecktyphus auf dem galizischen Kriegsschauplatze.) W. Spat.
108 Roentgen Localization of Foreign Bodies in the Tissues. V. F. Hess.
109 Harmless Pumpkin Seeds More Effectual Than Male Fern in Treatment of Tapeworm. (Ueber Bandwurmkuren.) L. Stefanowicz.
110 *Twenty-Five Cases of Foreign Bodies in Larynx, Trachea or Bronchi. K. Kofler. Commenced in No. 40.
111 Experiences While a Prisoner in Russia and During the Escape Through Turkestan. R. Strisower.
112 Prophylaxis of Venereal Disease at Close of the War. Brandweiner.

94. **Spontaneous Agglutination in Malarial Blood.**—Biglieri reports from the Malaria Laboratory at Tucuman (Brazil) that spontaneous agglutination was noted in 158 of 600 malaria cases. The test was positive in 56 per cent. of the 113 tertian malaria cases and in 55 per cent. of the 55 quartan, while it was positive in 63 per cent. of the 103 cases of malaria of the tropical type. The findings were also positive in 54 other cases with symptoms of malaria but no parasites to be found in the blood. This spontaneous agglutination was noted likewise in puerperal septicemia and also in the pregnant women examined. In tuberculosis and

typhoid the response was negative, as in healthy blood. The test was made with Ross' drop method; instead of the drop of blood drying evenly, there is clumping of the blood corpuscles in a few seconds if the phenomenon occurs.

97. **Disturbances in Micturition After Getting Chilled.**—Schwarz has encountered a number of cases of painful or scanty urination or enuresis in soldiers on active service exposed to the vicissitudes of the weather. No organic trouble could be discovered, but the jet was exceptionally powerful. The painful type of disturbances resembled the dysuria with enlarged prostate; in two cases there was complete retention. Analysis of the various cases suggested a probable peripheral infectious nervous affection as the cause of the trouble in some cases. This entailed either hypertony of the detrusor nerve, with consequent incessant desires to urinate and forcible expulsion of the urine, or it entailed paresis of the detrusor and depressed sphincter functioning, thus preventing the normal voiding of the bladder.

100. **"Vascular Erythema."**—Lipschütz discovered among the soldiers in his charge at Przemysl twenty cases of an acutely developing skin affection which was new to him. Red spots appear on the skin resembling the roseola of syphilis, but the minute vessels in the area are extremely dilated and congested. This circumscribed erythema lasts from one to several days; it appears mainly on the chest and back, and displays a marked tendency to recur. One man related that he had had this affection return again and again during the last few years. There was no break in the epithelium, as would have been the case if the efflorescence had been the result of an insect bite. The dermatosis, Lipschütz adds, is most certainly not an inflammatory process nor what is generally called a circulatory disturbance.

101. **Contusion of the Abdomen.**—Moro reports a case of a pseudocyst in the pancreas with recovery after the walls of the cavity had been sutured to the skin to facilitate drainage. The operation followed in about a month after the contusion. Pains in the pancreas region developed after healing of the fractured ribs and arm. The pseudocyst contained 1.5 liters of fluid and continued to secrete profusely for three weeks but recovery was finally complete after cauterization of the fistula. In the second case the spleen had been torn across down into the hilus by the contusion and it was removed. The muscular defense and the free fluid in the abdominal cavity called for the laparotomy. A not long preceding scarlet fever had predisposed the spleen to a rupture as it was nearly twice the normal size and abnormally soft. Seven months later the boy was apparently in perfect health but the leukocytes numbered 12,300 and the lymphocytes formed 30 per cent.; the eosinophils 16 per cent., showing a certain influence on the blood picture from the lack of the spleen.

In the third case there was muscular defense on the right side of the abdomen after the contusion but there were no signs of free fluid and no spontaneous pain except between the shoulders. No vomiting, no urinary derangement, and the shock was transient. The pulse was normal, but this must be regarded as an abnormally slow pulse as after such a contusion the pulse usually runs up. The liver was found crushed and torn, three large and several small pieces having been pried off from the liver by the contusion. Suture was impossible and the man died the seventeenth day after presenting jaundice from the second day.

110. **Foreign Bodies in the Air Passages.**—There was no mortality in the twenty-five cases reported from Chiari's service in the last five years. One patient was a young man into whose throat a coin had slipped over five months before. There was slight coughing at first, but after that not the slightest disturbance, neither in breathing, speaking or swallowing, smoking or singing. A roentgenogram taken the same day showed no trace of the coin and it was supposed to have passed into the stomach. Five months later his throat was painted with iodized glycerin several times as he complained of laryngitis; after a few days there was pain on swallowing. Roentgenoscopy then revealed the edge of the coin visible between the vocal cords where it had evidently been impacted for nearly six months. The first roentgen examination had evidently shown the coin (a *Krone* piece) from the side alone, as a straight line on the median line, and its shadow had been overlooked. As there were no further disturbances from its presence, the suspicion of a foreign body was abandoned. The patients were seen soon after the foreign body had been aspirated in all but eight cases. In one of the latter group a two-teeth piece of a set of false teeth had been in the bronchi for seven years, inducing disturbances ascribed to other causes as the false teeth had been assumed to have passed into the stomach.

The foreign bodies were in the right twice as often as in the left bronchus. In some of the five cases of a foreign body free in the air passages, it could be heard hitting against the vocal cords. In one case the cough was ascribed to recurrence of whooping cough. Direct upper bronchoscopy was applied in twenty-four of the cases but in one the swelling of the bean rendered tracheotomy at once imperative. The extraction was always found easiest with the patient in the dorsal decubitus, possibly with the upper part of the trunk lowered. The suggestion is made that hard smooth foreign bodies, such as glass beads, which it is sometimes so hard to grasp, might drop out of themselves if the patient was under the influence of a general anesthetic and then turned with the head downward. Reflex contraction prevents the dropping out of the foreign body when this is done without general anesthesia, but with the muscles relaxed it might be worth a trial before starting on tracheo-bronchoscopy. Large quantities of phlegm or pus interfered with the extraction in some of the older cases; this was combated by injection of morphin and lowering the head in some of the cases. In one case the tip of the instrument was bent so that it could be introduced into the hole in a bead which kept slipping out of the extracting forceps. The patients were not allowed to talk after extraction of the foreign body, to spare the larynx, and cold was applied externally to the neck, and the food given was all fluid and cold. In five cases tracheotomy became necessary a few hours later, on account of swelling of the mucosa of the subglottic space, and large amounts of secretions were voided through the cannula, after which healing proceeded rapidly. Kofler remarks in conclusion that an elliptical shape for the tubes used in tracheobronchoscopy and esophagoscopy permits a much more spacious lumen than a round tube, especially for children. The curve of an elliptical tube also permits better inspection of the field.

Zentralblatt für Chirurgie, Leipzig

October 23, XLII, No. 43, pp. 769-784

113 *Apparatus for Extension Permitting, from the First, Passive or Automatic Movements of the Joint. (Streckverbandapparat mit passiven Gelenkbewegungen und Streckverbandapparat mit automatischen Gelenkbewegungen.) Ansinn.

114 *Ekehorn's Operation for Prolapse of the Anus. J. Becker.

113. **Extension Apparatus Permitting Exercise from the First.**—Ansinn states that the stiff knee and atrophied muscles encountered so often after a fractured femur has healed, demonstrate the need for exercising the knee from the start. To meet this he has devised an apparatus with a T splint which applies extension to both thigh and leg, leaving the knee free and balanced so that it is easy to raise and lower the part controlling the thigh. The attendants can thus exercise the joint from time to time or the patient can do it himself with a rope and pulley, or it can be kept up day and night by connecting the apparatus with a small electric motor. In the thirty cases in which he has applied this apparatus to date the effect realized has surpassed the highest anticipations, the fracture healing without a trace of ankylosis or muscular atrophy while consolidation was complete exceptionally early.

114. **Ekehorn's Operation for Prolapse of the Anus.**—The technic for this operation was described in THE JOURNAL, June 12, 1909, p. 1966. It was devised for children, but Becker was much gratified at the prompt and permanent cure in the man he has treated with it. A stout silk thread is passed around the anus, just under the mucosa, the ends drawn up

and tied over the sacrum. The thread was left for twenty days, the tampon frequently renewed, and the thread drawn along each time. The aim is to induce an irritation in the passage bored by the curving needle passed around the anus, and kept open by the thread. The slight irritation causes production of enough cicatricial tissue to hold back the prolapse.

Zentralblatt für Gynäkologie, Leipzig

October 23, XXXIX, No. 43, pp. 747-762

115 *Hirschsprung's Disease Preventing Delivery. (Megakolon als Geburtshindernis.) R. T. Jaschke.

115. **Megacolon Impeding Delivery.**—The apparently healthy young woman was at the tenth month of her first pregnancy when she applied for relief from obstipation. A large tumor was found almost filling the small pelvis, and assumed to be an impacted cervical myoma. Under castor oil and enemas the bowels moved daily and the patient seemed in the best health with good appetite. When labor set in the child was delivered by cesarean section, and the tumor was found to be the sigmoid flexure, measuring 60 cm. in circumference, the entire large intestine enormously distended with thickened walls. The patient seemed to be doing well under measures to clear out the megacolon but collapsed the sixth day with symptoms of severe intoxication. Necropsy showed ulceration throughout the colon, but no peritonitis. The suture in the uterus was intact. Notwithstanding the extensive ulceration in the large intestine and the quantities of feces extracted or voided spontaneously, no blood had been visible in the stools; Jaschke thinks that there must have been some chemical decoloring process at work. Whether the megacolon was congenital or acquired is not known, but there was a history of one severe illness in childhood with no movements of the bowels for eight days.

Grèce Médicale, Athens

June 1-15, XVII, Nos. 11-12, pp. 21-24. French Supplement to Iatriki Proodos

116 *Typhoid Pyonephrosis. P. Soubeyran and S. N. Oeconomos. Concluded in No. 13.

August-September, Nos. 15-18, pp. 29-32

117 *Treatment of Parasyphilitic Affections. J. Cecikas.

116. **Typhoid Pyonephrosis.**—Soubeyran and Oeconomos report the case of a youth of 17 who developed right seropyelonephrosis during convalescence from severe typhoid. The kidney was drained with two tubes and conditions apparently righted themselves. Three months later, however, high fever and pyuria, alternating with retention, compelled nephrectomy. The kidney was found distended with pus. The walls were so thin and degenerated that the organ looked like a pig bladder full of pus. The patient promptly recovered after its removal. Records of only six cases of the kind were found in the literature, all but one in men. The pyonephrosis became manifest the thirteenth day in one of the cases, during convalescence in most of the others, and from one to several months later in the rest.

117. **Treatment of Tabes and Paralysis.**—Cecikas relates a few striking cases from his practice to emphasize his statements as to the clinical cure possible in tabes and general paralysis when they are detected early and given vigorous treatment. The increasing proportion of mild and abortive types of these affections may be credited, he remarks, to the more energetic treatment we are now giving syphilis. We know, he continues, "that mercury stored in the tissues gets into the circulation again in waves of elimination, hence its capricious reappearance in the urine, often after prolonged eclipses. Secondary lesions, refractory during the course of treatment, may retrogress during this flux of mercury into the blood, and gradually disappear entirely." He says of salvarsan that as it is precipitated by body fluids, the greater portion fails to have any action until it gets dissolved again. In order to augment the action on the parasites without increasing the toxicity, he advocates combining salvarsan, mercury and arsenic. The very gradual elimination of the two latter renders the treatment with the three practically successive, even when they are given together. The main point in treatment is to suspect possible tabes or paresis in every case of nervous trouble, even mere neurasthenia, insomnia, vertigo or pains, and any tendency to weakness or anemia or loss in weight in an old syphilitic. The serum should be examined for the Landau and Wassermann reactions and its power to digest brain tissue, and the cerebrospinal fluid should be examined for its albumin and cell content and its power to deviate complement.

Policlinico, Rome

October 24, XXII, No. 43, pp. 1437-1468

118 Purification of Vaccine. (Sulla purificazione del vaccino Jenneriano.) L. M. Spolverini.

119 *Gonorrheal Keratosis of the Penis. (Cheratosi blenorragica del glande.) G. C. Sanfilippo.

119. **Gonorrheal Keratosis.**—In the case reported the man was being treated for acute gonorrhea with involvement of one knee when circinated lesions of keratosis developed on the penis, commencing around the urinary meatus. They were the characteristic gonorrheal horny patches, and all subsided as the gonorrhea yielded to treatment, thus confirming the gonorrheal nature of the affection. It was the young man's second experience with gonorrhea after an interval of five years.

Riforma Medica, Naples

October 16, XXXI, No. 42, pp. 1149-1176

120 Technic for Making Antityphoid Vaccine. (Alcune norme di tecnica per la preparazione dei vaccini del tipo antitifico. Coltivazione dei germi e dosaggio dei vaccini.) F. Porcelli-Titone.

121 Three-Day Fever at Naples. C. Martelli.

October 23, No. 43, pp. 1177-1204

122 Classification and Treatment of Arrhythmias. (Sulla terapia delle cardiopatie. I.) G. Rummo.

123 Metabolism of Nitrogen in Exudates. (Ricerche cliniche e sperimentali sul metabolismo dell'azoto negli essudati.) F. Alzona. Commenced in No. 42.

Brazil-Medico, Rio de Janeiro

October 2, XXIX, No. 37, pp. 289-296

124 Action of Pyrethrum on Mosquitos. A. da Costa Lima.

October 16, No. 38, pp. 297-304

125 Brazilian Species of Genus Tetrameres Cliplin, 1846. L. Travassos.

126 Urethroscopy in Men. A. Pereira. To be continued.

Semana Medica, Buenos Aires

August 5, XXII, No. 31, pp. 155-182

127 The Oscillometer in Diagnosis of Mitral Valvular Disease. R. A. Bullrich.

128 Encouraging Results with Radium Treatment of Certain Affections of the Middle and Internal Ear. (Radiumterapia en algunas afecciones del oido.) D. J. Spinetto.

129 The Pulse with Heart Disease. (El pulso en las enfermedades del corazon.) E. Rodriguez. Concluded in No. 32.

August 12, No. 32, pp. 183-210

130 History and Present Status of Serotherapy of Bubonic Plague. J. Moreno. Concluded in No. 34.

August 19, No. 33, pp. 211-238

131 *Severe Poliomyelitis with Recovery Under Injections of Convalescent's Serum. G. A. Alfaro and J. M. Hitce.

132 Inflatable Girdle to Sustain Sagging Stomach. (Ptosis gastrica y cintura neumatica hypsogastrica de Enriquez.) J. F. M. Gomez.

133 Technic for Testing Antitetanus Serum. G. Tizzoni and P. Perrucci.

August 26, No. 34, pp. 239-266

134 Present Status of Arteriosclerosis. C. P. Mayer. Commenced in No. 32.

135 Case Showing Danger of Mistaking Fibroma Under the Mucosa for Retained Scrap of Placenta. F. A. Deluca.

131. **Serotherapy of Acute Poliomyelitis.**—Alfaro and Hitce report the case of a 7 months' babe completely paralyzed by the fourth day of acute poliomyelitis; swallowing was difficult and respiration shallow and irregular. As the condition was growing worse, 2 c.c. of serum from two children who had had the disease a few months before was injected into the child's spinal canal the seventh day of the disease. Improvement was evident, and it continued to progress under further daily injection of 1.5, 2 or 3 c.c. of the serum, all the paralysis subsiding. There was no local or general reaction to any of the injections, and a total of 25 c.c. was thus injected

in the course of two weeks. The child was soon completely restored. They followed Netter's technic. The three middle injections were of serum from a young woman with diffuse myelitis; the diagnosis of poliomyelitis proved a mistake in this case.

Russkiy Vrach, Petrograd

XIV, No. 36, pp. 841-864

136 *War Psychoses. A. V. Gerver. Commenced in No. 34.
137 Indophenol Oxidase in Tissues of Animals, and the Variations Caused by Staphylococcus Infection. B. I. Slevtzoff and L. N. Chernevsky.
138 *Vaccination Against Gaseous Gangrene. V. I. Nedrigailoff.
139 *The Method of Rowntree and Geraghty in Functional Diagnosis of Renal Diseases. E. M. Naroditzky.
140 *Experimental Infection of Siberian Marmot with Plague During Hibernation. N. A. Gaisky.

No. 37, pp. 865-888

141 Operative Treatment of Hernia. B. K. Finkelstein.
142 *Sequestration of the Liver After an Operation for Acute Appendicitis. L. G. Stukkey.
143 Acanthosis Nigricans. P. S. Grigorieff.
144 *Tetany Successfully Treated with Parathyroid Extract. D. M. Rossiysky.
145 Apraxia. S. A. Liass.

136. **Psychoses in the Russian Army; Absence of Alcoholic Insanity.**—Gerver divides the war psychoses into three classes: To the first belong psychoses arising in persons without any hereditary taint, being caused solely by the war environment and violent emotions resulting from battles. To the second class belong psychoses that would develop in ordinary circumstances of peace, but which were prematurely brought on by the war. Here belong dementia praecox, manic-depressive insanity, paranoia, paralytic dementia, etc. To the third class belong traumatic psychoses, caused by wounds and contusions. The psychoses of the first category do not differ in any way from the old types, but they may be subdivided into those caused by battles, by trench life, and the rear guard psychoses. Clinically they belong to the acute mental disorders, amentia and asthenic psychoses. Frequently they develop in the form of neurasthenic insanities. The specific character of war psychoses of all the three classes consists in the peculiar coloring and the character of the hallucinations, illusions, delusions, and the patient's conduct. The contents of the hallucinations and delusions are the experiences of the war life. Another feature is depression, followed often by excitement, and confusion of consciousness. The character of the battle (artillery, infantry, bayonet attacks, etc.), the duration of the war life at the front, the course of military events (offensive or defensive, victories or defeats), and the general morale of the army determine the larger or smaller proportion of psychoses that develop. Gerver further claims that in the present campaign the amount of psychoses is comparatively small, about 1 per thousand; in the previous wars the rate was 2 or 3 per thousand. The main cause of the decreased rate is the total absence of alcoholism. In the Russo-Japanese War this was responsible for one third of all the psychoses. In the present campaign there has not occurred a single case of alcoholic insanity.

138. **Vaccine Against Gas Gangrene.**—Nedrigailoff offers a rapid method of preparing a vaccine against gaseous gangrene. He used as material the exudate from an incised gangrenous ulcer and two pieces of diseased muscles and subcutaneous tissue which were ground in a mortar and placed in a small tube with the fluid, mixed with three times the amount of normal salt solution. The corked tube was then thoroughly shaken for ten or fifteen minutes. The contents of the tube were then filtered through a small piece of cotton and through a Chamberland or Berkefeld filter. Twenty to thirty minutes later a sufficient amount of sterile, reddish fluid accumulates ready to use. Altogether it takes two hours to prepare the vaccine. Another method, by heating, can be used in the absence of a Chamberland or Berkefeld candle, but the heating method takes six to eight hours. The vaccine prepared by the first method was used on a guinea-pig which received 5 c.c. hypodermically; a painful edema developed which disappeared in three days. He had no opportunity to use it on men, as in his cases of gas infection death rapidly followed.

139. **The Phenolsulphonephthalein Test of Kidney Functioning.**—Naroditzky studied this reaction in thirty-seven cases of various renal lesions and in nine subjects with apparently healthy kidneys. The test was always made in the morning, the reagent having been injected in the upper portions of the gluteal muscles or into the lumbar muscles. Twenty to thirty minutes before the injection the patient was given 200 or 400 c.c. of water. The test dose was 6 mg. dissolved in 1 c.c. of water. The urine should be examined for the presence of the reagent immediately, or not later than two hours after the injection. He found that the phenolsulphonephthalein test is a good aid in the diagnosis of functional renal activity even in those cases in which other methods fail, but it is important to determine the amount of the coloring substance eliminated during the first hour. This test differentiates between parenchymatous and interstitial forms of nephritis. In mixed and parenchymatous nephritis, as well as in other renal affections, it is possible to determine, to a certain extent, the involvement of the interstitial tissue. In acute cases, repeated examinations may reveal improvement in the state of the kidneys. Naroditzky also found that with reduced elimination of the phenolsulphonephthalein there is increase of nitrogen in the blood, especially in interstitial nephritis. The phenolsulphonephthalein does not indicate a general retention of nitrogen in the blood, only that a part of the nitrogen is retained which is normally voided by the affected kidney. Therefore, the power of the kidney to eliminate nitrogen can be easily determined by this test without resorting to complicated and difficult methods of determining the nitrogen rate in the patient's blood.

140. **Experimental Inoculation with Plague.**—Gaisky infected Siberian marmots with a forty-eight hours old agar culture of bubonic plague bacilli while the animals were in a condition suggesting winter sleep. A dose of one-millionth or a tenth of one-millionth of a gram kills them in from ten to twenty-one days, while they are in this hibernating condition. Three animals were experimented on with the same dose when they were in deep sleep, and the results were negative. It seems, therefore, that in a state of deep winter sleep the marmots are immune against bubonic plague infection.

142. **Sequester Cast Off from the Liver.**—Stukkey reports an unusual case of acute appendicitis which though operated on twenty-two hours after its clinical onset, became complicated with an abscess and gangrene of a portion of the liver. The abscess showed the twenty-first day after the operation and was due to streptococcus infection. It was drained, but twenty-four days later a sequester of the liver, 7 cm. long and 1.5 to 2 cm. wide, was removed through the wound. The patient recovered about four months later and is now well.

144. **Parathyroid Treatment of Tetany.**—Rossiysky reports a case of tetany in a young man successfully treated with hypodermic injections of parathyroid extract. Altogether thirty-five injections were made, with 2 c.c. of the extract as a single dose. The subjective condition improved considerably, with complete disappearance of the objective signs (Trousseau, Erb, Chvostek) which were very pronounced before the injections were given. No other treatment was administered. Complete recovery followed.

Hospitalstidende, Copenhagen

October 20, LVIII, No. 42, pp. 1075-1102

146 Fatal Intestinal Involvement in Measles in Two Infants. (Enteritis ved Morbilli.) K. Secher.

October 27, No. 43, pp. 1103-1126

147 Congenital Infrapapillar Atresia of the Duodenum Corrected by Anastomosis. N. P. Ernst.
148 Diffusion of Gases in Air in Lungs. III. (Om Lungeluftblandingens Homogenitet. Fortsatte Undersøgelser.) C. Sonne.

Ugeskrift for Læger, Copenhagen

October 21, LXXVII, No. 42, pp. 1639-1672

149 Detailed History of Diabetic with Recurring Coma Kept Under Control. (Tilfælde af Coma diabeticum. Alkalibehandling, Diætbehandling.) V. Scheel.